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ANALYSIS OF ARMY FIELD FEEDING CLASS I RATION BREAKDOWN REQUIREMENTS AND ALTERNATIVE GROUP RATION MODULE SIZES

by
Harry J. Kirejczyk

October 2001

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In 1986, the U.S. Army adopted the "module" concept for resupply of group rations into theaters of operations. The modules were designed to resolve the historical problems associated with resupplying theaters with bulk food items, simplify Class I distribution/ration breakdown, and help ensure units received all menu components/items to provide supported troops a complete and nutritionally balanced meal. While the first group ration module was designed to provide 36 meals, depending on type ration, current group ration modules are designed to provide 18, 50, or 100 meals. This report analyzes alternative module sizes of 18, 36, 50, 54, and 72 to determine if there is an "optimal" module size based on total cost, logistical impact, operational, and excess meal issue considerations. To reduce assembly and total ration costs, increase supply system flexibility and responsiveness, and reduce the buildup of excess components and stockpiles forward, the 2 key recommendations include: concept develop/prototype a unitized group ration with 72 meals that includes only the unique meal components, and excludes the common or similar meal components (e.g. trays, creamers, various jellies, etc.), and provide the common /similar components in a separate issue condiment/disposable pack, or separate disposable and separate condiment packs.

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Preface

This report details an analysis of the Class I ration breakdown requirements for two Army combat force structures. The objective of the analysis was to determine if there was an “optimal” module size (# meals) and concept for unitized group rations based on total cost, logistical impact, operational, and excess meal issue considerations. In addition, the field kitchen feeding strengths and associated ration breakdown requirements across units will provide the required baseline data to support follow-on concept development and evaluation of alternative integrated ration configuration, storage, and supply/distribution concepts designed to streamline in theater Class 1 logistics and reduce the associated logistical and combat service support impacts (e.g. Class I supply personnel, Class I stockpiles, Class I truckloads/transportation impacts, etc.)

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Executive Summary

This report details an analysis of field kitchen supported feeding strengths and associated overall Class I ration breakdown requirements as a function of module size for two Army combat force structures. The force structures analyzed include a Mechanized Infantry Division (MI Division) (TOE 87000A200), a heavy combat force, and the Integrated Combat Brigade Team (IBCT) -- a rapidly deployable light combat force. The objectives for the analysis were to determine if there is an "optimal" size for group ration modules (i.e. meals/modules) based on total cost, logistical, operational, and excess meal issue considerations; and to provide the baseline ration break point data and insight to support follow on efforts to conceive/develop and evaluate alternative integrated Class I configuration, storage, and supply/distribution concepts that streamline in theater Class I logistics and reduce associated logistical and combat service support impacts.

The Army first adopted the "unitized" or "module" concept for group rations in 1986. They were designed to address the historical supply problems associated with movement of bulk Class I items into a theater, simplify Class I distribution and ration break point operations, and help ensure that ration break points had all meal menu components required to issue supported units complete and nutritiously balanced meal menus. With the exception of common menu components like UHT (Ultra High Temperature) milk, pouch bread, and individual cold cereal, current group ration modules include the required quantities of all other menu items and components to feed a specific number of troops one group meal. These items and components are all pre-assembled into one box or a set of boxes. The UHT milk and pouch bread, which are common to all breakfast and dinner menus, and the individual cold cereal, which is common to all breakfast menus, are provided and issued separately as commercially packaged whole cases.

The first module developed was for the Tray Ration and was designed to provide 36 soldiers one group meal. Since then module sizes have varied and evolved over time. Presently, there are four different unitized group ration meal modules utilized by one or more military services. They include: the 50-meal Unitized Group Ration – A (UGR-A) and Unitized Group Ration –Heat/Serve (UGR-H/S) modules, the 18-meal Tray Ration modules, and the 100-meal unitized B-Ration modules.

This analysis considered 5 alternative meal module sizes to include: 18, 36, 50, 54, and 72-meal modules. The current tray pack or future polymeric tray, account for a dominant 60+% of the total component cost for the UGR-H/S and Tray Ration modules. Depending on menu item, each tray contains either 9 or 18 portions. From an overall cost perspective, the optimal size for either of these 2 rations will be a multiple of 18. This is the reason for including module sizes of 18, 36, 54, and 72 in the analysis.

As expected, with current ration break policies, the analysis revealed that the total over issues (# of excess meals) generally increased as module size increased for both force structures analyzed. The increases are relatively small, especially for the IBCT, provided the forces opted to set-up and utilize larger consolidated kitchens. However,

with current ration breakdown guidelines, if either force opted to utilize smaller company level kitchens to the maximum extent, then the potential over issues would increase significantly as the module size increased.

Total surcharges to cover assembly, administrative costs, and other indirect costs for current modules represent a significant portion of overall module cost. These indirect costs result in a add-on surcharge equal to 50% to 69% of actual component costs, and a resulting customer cost that is 150% to 169% of actual total component costs. UGR-H/S, Tray Ration, and unitized B's are depot assembled rations and the average surcharges for these rations on a per meal basis, range from \$1.50 to \$1.58 depending on ration.

Logically, one would expect assembly costs per meal to be less for larger modules and more for smaller modules. However, based on FY00 cost data, the Defense Supply Center Philadelphia (DSCP) applied assembly charges were the opposite and the highest for unitized B-Rations (100-meals) and the lowest for the Tray Ration (18-meal) modules. Possible explanations could include variations due to module production quantities, or depot utilized and associated levels of automation/production efficiency, direct labor costs, and overhead rates applied to establish the final customer cost for each module.

A detailed review of the composition of the menus for these rations, reveals that 50+% of the components are the same or at least very similar for all menus for each group ration. Also, there is a large core group of common or similar components across all rations and menus (e.g. trays, cups, creamer, coffee, etc.). The two key recommendations include:

- Concept development/prototype a unitized group ration for 72-meals that includes only the unique meal menu components and excludes the common or similar meal components (e.g. trays, cups, creamers, assorted jellies, etc). With this concept each module will typically include only 6-7 items.
- Provide all of the common/similar meal module components in a separate condiment/disposable pack or separate disposable and condiment packs to support both breakfast and dinner meals. One common pack could be designed for each ration, or ideally with only slight modification to each ration, (should a or be here) one common pack could be designed to support all rations.

Together, these recommendations should reduce overall module assembly and total ration costs, increase supply system flexibility and responsiveness, and reduce the buildup of excess meal components and stockpiles forward.

ANALYSIS OF ARMY FIELD FEEDING CLASS I RATION BREAKDOWN REQUIREMENTS AND ALTERNATIVE GROUP RATION MODULE SIZES

Introduction

For the U.S. military, Class I covers all subsistence items to include perishable and non-perishable bulk food items and prepackaged individual or group meals. The Meal, Ready to Eat (MRE) is the primary individual ration meal for all U.S. military services. For supply purposes, the MREs have always been pre-assembled into complete meals where all components for one meal are packed/sealed in a single bag. In turn, each case was packed with an assortment of meal menus. The pre-assembly and supplying of MREs in cases of complete meals were essential to insuring that soldiers received a variety of complete nutritionally balanced individual meals.

While the individual rations have always been provided as pre-packaged complete meals, group rations were re-supplied as separate bulk food items until the introduction of the 36-person meal "module" for the shelf-stable "tray" ration in 1986. When supplied as bulk food items, it was necessary for several different food items to come together at each ration breakdown point to facilitate the issuance of all required items for complete and nutritiously balanced meals. Needless to say, this frequently did not happen and resulted in the need to adjust or create "menus" based on actual available items. Also, since each group breakfast or dinner meal typically consisted of 16 to 25 different items, bulk re-supply of individual items resulted in a large, complex, labor intensive ration breakdown operation. To resolve these problems and reduce the complexity and labor intensity of ration break operations, the military services implemented a "unitized ration" or "module" concept for their group rations where all the food items for each menu were pre-assembled into one box or a set of boxes.

The objective of this analysis is to determine if there is an "optimal" size group ration module (i.e. meals/module) based on field kitchen feeding strengths, current ration break policies, operational considerations, and resulting total cost, and logistical impacts.

Background

While each military service utilizes the MRE as their primary individual ration, the group rations and associated module sizes utilized vary between services. While the initial group ration built around the tray pack consisted of 2 boxes and included 36-meals, the current group rations all utilize different module sizes. The current group rations include:

- Unitized Group Ration –Heat/Serve (UGR-H/S)

The UGR-H/S is the Army's and Air Force's shelf-stable group ration. This ration requires no refrigeration and would be the initial group ration provided to deployed personnel. The UGR-H/S includes an assortment of both breakfast and dinner type meals. The UGR-H/S consists of a set of 3 same size boxes that include all of the items (except for bread, milk, and cereal) and meal components to feed 50 individuals one group meal. The UGR-H/Ss are presently configured at 8 modules or 24 boxes totalling 400 meals per pallet load.

- Unitized Group Ration -A (UGR-A).

The UGR-A is the Army's and Air Force's follow-on group ration. The ration includes both shelf-stable components and perishable frozen components. This ration requires refrigeration for both distribution and for storage at kitchen level. This ration would be phased in and replace the UGR-H/S as the operation's theater matures and the logistical and tactical situation permits. This ration includes both breakfast and dinner type meals. The UGR-A also consists of a set of 3 boxes to include 2 non-perishable boxes and 1 frozen box and includes all of the items (except for bread, milk, and cereal) and meal components to feed 50 individuals one group meal. The non-perishable boxes are the same size as the UGR-H/S boxes. For this ration, each non-perishable pallet has 12 modules or 24 boxes totalling 600 meals. The single frozen box varies in size depending on the specific breakfast or dinner menu and range from 15 to 75 boxes per pallet or 750 to 3,750 meals per pallet load.

- Tray Ration

The Tray Ration is the USMC's initial group ration. This ration is non-perishable and requires no refrigeration. This ration consists of a single box and except for bread, cereal, and milk includes all of the items and meal components to feed 18 individuals. The box is the same size as that used by the UGR-H/S and they are packed 24 boxes or 432 meals per pallet load. This ration is similar to the UGR-H/S in that it utilizes precooked shelf stable half steam table size trays for several menu items that only require heating prior to opening and serving.

- Unitized B-Rations

This ration is the USMC's follow-on group ration. This ration is totally non-perishable and requires no refrigeration. While the Tray Ration makes extensive use of precooked foods that require only heating prior to serving, the unitized B-Rations require more extensive cook involvement to assemble all the required ingredients and actually prepare the various menu items. The ration includes both breakfast and dinner type menus. The unitized B-Rations consist of a set of six same size boxes that have all of the items and food components, excluding bread, milk, and cereal, to feed 100 individuals one group meal. The boxes are the same size as those utilized with UGR-H/Ss. At the present time, all unitized B-Rations are packed 2 modules or 12 boxes totaling 200 meals per pallet load. However, the boxes are the same size as those for the UGR-H/S, and

could be packed 4 modules or 24 boxes totaling 400 meals per pallet load for transport purposes.

Thus, the modules for the current group rations are configured and sized to support varying number of troops to include 18, 50, and 100. However, similarities between all modules include: utilizing the same size box for the non-frozen ration components, and all menu items to feed a set number of troops, except for the common bread and milk components for all breakfast and dinner meals, and the common cereal component for the breakfast meals.

There are advantages and disadvantages associated with both smaller and larger module sizes. For example, in terms of potential excess meal issues, smaller modules will tend to reduce total over-issues while larger modules tend to increase total over issues. However, for kitchens supporting a large number of soldiers, small modules will increase the workload while larger modules will decrease the workload associated with breaking down the modules and separating the items to support food preparation and serving activities. Conversely, from a module assembly perspective, one would expect assembly costs on a per meal basis to be higher for smaller modules than for larger modules due to the need to assemble/pack a larger number of different items in each box.

Therefore, the objective for this analysis is to determine if there is an “optimal” size for group ration meal modules given the operational advantages and disadvantages of smaller and larger modules, field kitchen feeding strengths and resulting ration break requirements, and associated total over-issues, total cost, and logistical impacts as a function of module size.

Methodology

This analysis is based on the field feeding support plan and the resulting supported field kitchen feeding strengths and associated ration break requirements for two Army combat force structures. The two force structures include a Mechanized Infantry (MI) Division (TOE 87000A200), and the new Integrated Brigade Combat Team (IBCT). The MI Division is considered a heavy combat force and is organized with five Mechanized Infantry Battalions (Bradleys), four Tank Battalions (M1A2s), and two Attack Helicopter Battalions (AH-64s) in addition to the standard complement of other divisional combat and combat service support units. The IBCT is considered a light combat force, and is designed for rapid deployment with dominant combat power from CONUS to anywhere in the world. The IBCT combat force consists of three Infantry Battalions and one Field Artillery Battalion.

The MI Division is staffed and equipped for both an organic UGR-H/S and an UGR-A group ration feeding capability. However, the capability or level at which each type of ration can be prepared may vary for some divisional units. For example, the Mechanized Infantry Battalion and the Tank Battalion are only organized and authorized the necessary cooks and foodservice equipment (i.e. Mobile Kitchen Trailers (MKTs)) to

provide subordinate and supported units with UGR-As from one consolidated battalion level kitchen. However, for UGR-H/Ss, these battalions have the capability, the cooks and foodservice equipment (i.e. Mobile Kitchen Trailers plus Kitchen Company Level (KCL)) to prepare them at one consolidated battalion level kitchen or with separate company level kitchens. Whether the battalion opts to utilize one consolidated kitchen or up to five company level kitchens for UGR-H/S is up to each battalion commander. How these battalions decide to prepare/provide UGR-H/Ss can vary between like battalions, from operation to operation, or even from day to day due to a host of factors. While the Mechanized Infantry and Tank Battalions are organized to provide UGR-As only from consolidated battalion level kitchens, other divisional combat units, for example the Field Artillery Battalion (155SP), is authorized both the cooks and the foodservice equipment to prepare both UGR-As and UGR-H/Ss at company or battery level.

The actual field feeding support plan and resulting supported troop strengths per field kitchen for the Mechanized Infantry Division, or any other force structure, will vary from operation to operation or even from day to day for a given operation due to a wide variety of factors. Some of these factors include: theater maturity, threat characteristics, tactical environment, terrain features, assigned coverage areas and level of dispersion, weather, and others. Within the division, almost all units have an organic field feeding capability at either the battalion or company/battery level. However, some units have no organic field feeding capability and totally depend on other units for their field feeding support. Two examples of these type units include the Military Police (MP) Company and Chemical Company. Both of these companies have divisional level missions and deploy various squad and team level elements throughout the divisional area to perform their assigned missions. Actual deployment locations, units supported, and assigned missions for deployed elements can vary from day to day. For these units, deployed elements are attached to and provided feeding support by the supported unit. For units with an organic field feeding capability, some elements may still deploy remotely, attach to, and be provided field feeding support by other units. Two examples include the Signal Battalion and Military Intelligence Battalion who have elements that deploy, support, and attach to the division main command post and the three brigade headquarters for field feeding support. Thus a unit with a field feeding capability may provide field feeding support to all unit elements, only some unit elements, and/or any supporting elements attached from other units for field feeding support.

For this analysis, a representative or typical field feeding support plan was developed based on a detailed review of Section I and Section II of the Tables of Organization and Equipment (TOE) for all of the subordinate units (e.g. brigades, squadrons, battalions, company, teams, etc) of the Mechanized Infantry Division (TOE 87000A200) and the Integrated Brigade Combat Team. Section I of each TOE provides a descriptive summary of the units' mission, capabilities, allocation or assignment, deployment location, dependencies, required support from other units, other units supported and how, and relevant Field Manuals. Relative to field feeding, Section I typically provides insights/details to whether the unit has an organic field feeding capability or is dependent on other units, whether certain elements typically deploy and are provided feeding support by another unit, whether the unit provides feeding support

to other units of attached elements from other units, and whether the unit typically sets-up and operates authorized field kitchen equipment in one consolidated location or perhaps in multiple locations. Section II of each TOE details authorized personnel in terms of position, grade/rank, military occupational specialty (MOS), and quantity; and authorized equipment by type and quantity. Relative to foodservice, Section II specifies the number of authorized cooks and amount and type of foodservice equipment authorized. For some battalions, Section I is not always specific whether the battalion typically sets-up and operates one consolidated kitchen or multiple separate kitchens in various locations when providing UGR-As. For these units, authorized cook positions and foodservice staffing authorization criteria were also analyzed to determine whether authorized staffing levels were sufficient for only one consolidated kitchen or adequate to support 2 or more separate kitchens. Based on this analysis, and a review of subordinate unit deployment locations and missions, assumptions were made on how many kitchens the battalion would typically set-up for UGR-As. Based on this information, a typical or representative field feeding support plan for each force structure was developed by cross-walking the detailed Section I information between TOEs and various assumptions as required. The resulting field feeding support assumptions and unresolved issues were provided to the U.S. Army Combined Arms Support Command (CASCOM) U.S. Army Quartermaster School (QMS) representatives for review and comment.

For each force, a separate field feeding support plan was developed based on the UGR-A kitchen locations and potential UGR-H/S kitchen locations with maximum utilization of company level preparation. UGR-As require a MKT or Container Kitchen, while UGR-H/Ss can be prepared with a MKT, Container Kitchen, or Kitchen Company Level. For example, a Mechanized Infantry Battalion has 5 companies and is authorized 18 cooks, three MKTs and four KCLs. Based on Section I of the TOE, for UGR-As, the battalion operates one consolidated kitchen (i.e 3 MKTs) at the Headquarters and Headquarters Company to support all battalion units and attachments. In addition, authorized staffing levels are only sufficient to support one consolidated UGR-A kitchen, and not two or three separate UGR-A kitchen operations. However, for UGR-H/Ss, each battalion has the capability, equipment, and cooks to provide them from one consolidated kitchen, or from up to five separate company level locations utilizing either KCLs or MKTs.

The detailed development of the field feeding support plan for the Mechanized Infantry Division is provided in Appendix A. Table A-1 details the field feeding support plan to include all of the units and elements of units supported by each field kitchen when the kitchens are set-up and operated at the assumed UGR-A kitchen locations and also with maximum utilization/operation of company level UGR-H/S kitchens. Other data presented includes the strength of each unit or element supported by each kitchen, and the total supported feeding strength per kitchen and overall for all like divisional units. Table A-2 summarizes relevant field feeding information extracted from the unit TOE's, and in addition, the assumptions and rationale for the divisional field feeding support plans detailed in Table A-1.

For the IBCT force structure, similar information is detailed in Appendix B, Tables B-1 and B-2. While the Mechanized Infantry Division has an organic field feeding capability, the IBCT does not. Instead, the field feeding capability is provided by the Combat Service Support Company (CSSC) (TOE 63390F000), which does not initially deploy with the IBCT. In addition to providing the IBCT's field feeding capability, the CSSC augments the IBCT in the areas of direct support level logistics, general supply support, motor transport support operations, organizational and direct support field maintenance, and health support. Prior to the arrival of the CSSC in theater, the IBCT unit subsists solely on MRE or other individual rations. The field feeding support plan for the IBCT is based on the resulting IBCT force structure after the CSSC arrives and attaches to the IBCT Brigade Support Battalion.

Two separate field feeding support plans were also developed for the IBCT, one based on UGR-A locations and one based on maximum utilization of company level UGR-H/S operations. The Field Feeding Support Platoon of the CSSC has six field feeding teams. Each team is configured, staffed, and equipped to provide field feeding support to specific elements of the IBCT. Each team is configured and staffed to provide all supported units with UGR-A from one consolidated kitchen. With the exception of the Brigade Support Battalion field feeding team, the other five teams are capable of providing supported units with UGR-H/S rations from one single consolidated kitchen or from separate company level UGR-H/S kitchen operations. The Brigade Support Battalion field feeding team is designed to provide supported units with both UGR-A and UGR-H/Ss from one consolidated kitchen only, and is not capable of separate company level UGR-H/S operations. For more details relative to development of the IBCT field feeding support plans, refer to Appendix B.

Ration Break Requirements as Function of Module Size

Depending on deployment and/or field training exercise factors and constraints, units pick-up one, two, or three days of Class I stocks at each ration break. With current Army ration break policies, authorized Class I issues are established on a by kitchen and by meal basis and then summed to determine the total authorized issue for each kitchen for each ration break. For unitized group rations, authorized quantities for each kitchen and meal period are determined by dividing the forecasted supported troop strength for each meal period by the module size and then rounding up to the next whole number.

With current ration break policies, the number of kitchens a battalion opts to operate can affect its' authorized UGR issues significantly. While a Mechanized Infantry Battalion operates one consolidated kitchen to provide UGR-As, it can set-up and operate one consolidated kitchen or up to five separate company level kitchens to provide UGR-H/Ss. As detailed in Table A-1, each Mechanized Infantry Battalion provides field feeding support to a total of 827 troops. If the battalion opts to support all 827 troops from one consolidated kitchen, the battalion would be authorized seventeen 50- meal modules. If the battalion opts to set-up and utilize 5 company level Heat-Serve operations, the Headquarters and Headquarters Company kitchen supporting 355 troops

would be authorized 8 modules, and each of the 4 Rifle Company kitchens supporting 118 troops would be authorized 3 modules. Thus, to provide field feeding support to 827 troops, the battalion will be authorized from 17 to 20 UGR-H/S modules depending on how many separate kitchens it decided to operate. With current ration break point policies, the decision to operate more small kitchens could result in the same number of modules being authorized, but more typically will result in more modules being authorized.

Table 1 summarizes the total authorized modules as a function of module size for the MI Division and the IBCT. These authorizations are based on the field feeding support plans and associated field kitchen feedings strengths developed in Appendix A for the MI Division and Appendix B for the IBCT. Module authorizations are calculated based on both providing feeding support from the UGR-A kitchen site locations (and associated supported feeding strengths), and for maximum utilization of company level UGR-H/S kitchen sites. The number of authorized UGRs based on the UGR-A kitchen locations are detailed in Table A-3 for the MI Division and in Table B-3 for the IBCT as a function of module sizes. Similar information is provided in Tables A-4 and B-4 with maximum utilization of company level Heat-Serve operations or kitchens.

The Mechanized Infantry Division, with 17,844 troops, would typically operate 55 separate kitchens to provide UGR-As to the entire division, and from 55 to 103 separate kitchens to provide UGR-H/Ss. The IBCT, with the attached CSSC, would operate 6 kitchens to provide UGR-As and between 6 and 25 kitchens to provide UGR-H/Ss to 3,317 total troops.

Table 1 summarizes the resulting total module requirements and over meal issues for both force structures as a function of number of field kitchens and 5 module sizes to include 18-meals, 36-meals, 50-meals, 54-meals, and 72-meals. The current USMC tray ration module provides 18 group meals. For group rations built around shelf stable tray menu components, this represents the smallest feasible module size as they provide either 9 or 18 portions per tray depending on menu item. Both the USMC Tray Ration and Army UGR-H/S are built around shelf stable tray menu items. For these rations, the tray components accounts for 60+% of the rations total component cost. Therefore, from a total cost per meal perspective, the optimal size for these type rations must be a multiple of 18 and the rationale for including module sizes of 36, 54, and 72 in the analysis. The 50-meal module was included as it represents the baseline or current size of the Army's UGR-A and UGR-H/S. The UGR-A consists primarily of regular commercially available food items. For this ration, many components, especially the frozen individual portion components, are often packed 12 or 24 portions per container. As a result, modules sizes of 36- and 72-meals could also potentially facilitate a common size UGR-H/S and UGR-A module, minimize repacking requirements, while minimizing excess issue of the high cost meal components.

As expected and summarized in Table 1, for each force structure and each specific meal module size, the total number of UGRs authorized and the associated over meal issues increase as the number of kitchens operated increases. In addition, for each force

Table 1. Overall Ration Break Requirements By Force Structure, Number of Kitchens, and Module Size

Force Structure	No. Kitchens	Factor	Meals/Module			
			18	36	50	54
Mechanized Infantry Division (Strength 17,844)	55	# Modules	1,018	521	376	359
		# Meals	18,324	18,756	18,800	19,386
		Over Issue (%)	2.7	5.1	5.4	8.6
Integrated Brigade Combat Team (IBCT) (Strength 3,717)	103	# Modules	1,036	540	412	392
		# Meals	18,648	19,440	20,600	21,168
		Over Issue (%)	4.5	8.9	15.4	18.6
	6	# Modules	210	106	76	71
		# Meals	3,780	3,816	3,380	3,834
		Over Issue (%)	1.7	2.7	2.2	3.1
	25	# Modules	217	111	88	83
		# Meals	3,906	3,996	4,400	4,482
		Over Issue (%)	5.1	7.5	18.4	20.6
						24.0

structure and a set number of kitchens, the total meal over issues generally increases as module size increases. To determine the optimal size for UGR-H/Ss, an important question is what percentage of the time will battalions tend to operate consolidated kitchens versus smaller company level kitchens when providing UHR-H/Ss. Based on limited feedback, indications are that most battalions tend to prepare UGR-H/Ss from the same larger consolidated kitchen locations that UGR-As are prepared at.

A more detailed review of Table 1 clearly indicates that for each specific module size that on an overall force structure basis, the percent over meal issues increases as the average supported strength per kitchen decreases. For example, the IBCT with 6 UGR-A kitchens has the largest average kitchen size and the smallest resulting percent. Conversely the IBCT with 25 UGR-H/S kitchens has the smallest average kitchen size and the largest resulting percent. The Mechanized Infantry Division with 53 kitchens has the second highest average kitchen size and the 2nd lowest percent while the same division with 103 kitchens has the second smallest average kitchen size and 2nd highest percent. In addition, these general results hold irrespective of module size with total for each force structure and field feeding support plans increasing as the meal module size increased.

Field Kitchen Feeding Strengths

Table 2 summarizes the distribution of both MI Division and IBCT field kitchen feeding strengths based on the number of UGR-A kitchen and the maximum number of UGR-H/S kitchens. For the MI Division UGR-A kitchen sites, a significant percent of the kitchens (49%), are relatively small and support less than 200 troops each. However, in total these kitchens support only 17% of the total division population. Conversely, while only 22% of the kitchens support 600 or more troops each, in total these large 600 plus kitchens support 50% of the total divisional population. However, for UGR-H/Ss, if the division opted to utilize company level UGR-H/S operations to the maximum extent, then 75% of the kitchens would support 200 or less troops each and in total support a larger 45% of the total force structure. In evaluating alternative module sizes, the distribution of kitchen sizes is important as it affects both the number of modules required and the kitchen workloads to breakdown or reverse unitize the modules. For kitchens supporting a large number of troops, small modules will generate a larger overall workload to breakdown the required larger number of modules, as compared to a smaller number of larger modules. As an example, a kitchen supporting 900 troops would need fifty 18-meal modules but only eighteen 50-person modules. Regardless of the number of meals provided in each module, the number of different items per module remains the same, about 18 to 21. The only difference is the quantity of each item and the number of boxes per module. For example, the 18-meal module utilizes 1 box while the current 50-meal module utilize a set of 3 boxes. With the 18-meal module, 18-21 items are in each and every box while with the 50-meal module, on average only 6-7 items are in each box. As a result, to breakdown the modules prior to the start of food preparation and serving, each item only needs be pulled from 18 boxes with the 50-meal boxes but a much higher and more time consuming and labor intensive 50 boxes for the 18-meal modules.

Table 2. Field Kitchen Feeding Strengths by Force Structure and Type Ration

Force Structure	Size Kitchen	UGR-A Kitchens		Max UGR H/S Kitchens	
		% Total Kitchens	% Total Troops	% Total Kitchens	% Total Troops
Mechanized Infantry Division	< 100	22	6	31	14
	< 200	49	17	75	45
	< 300	58	24	83	55
	< 400	64	30	91	73
	< 500	78	50	98	91
	< 600	78	50	98	91
	< 700	89	72	99	95
	< 800	89	72	99	95
Integrated Brigade Combat Team (IBCT)	< 100	0	0	40	20
	< 200	0	0	84	69
	< 300	17	8	96	86
	< 400	17	8	100	100
	< 500	17	8	100	100
	< 600	33	22	100	100
	< 700	50	40	100	100
	< 800	100	100	100	100

As shown for the IBCT force structure, for the UGR-A kitchen sites, there are no small kitchens supporting less than 200 troops and 83% (5 of 6) of the kitchens support 500 or more troops. However, with UGR-H/Ss, if the IBCT opted for maximum use of company level UGR-H/S operations, then a 84% of the kitchens would support less than 200 troops each and overall 69% of the total IBCT force structure.

Analysis of Module Cost Factors

Table 3 details the average per module and per meal costs by cost factor for unitized B-Rations (100 meals), Tray Ration modules (18 meals), UGR-A (50 meals) and UGR-H/S (50 meals). These costs are based on data provided by Defense Subsistence Center-Philadelphia (DSCP) and represent the average costs across all menus for each type ration. The B-Ration, Tray Ration, and UGR-H/S are assembled by Defense Logistic Agency (DLA) depots. The costs shown for these rations represent FY00 costs. The UGR-As are assembled by various commercial vendors and are re-priced monthly based on actual component costs. The UGR-A costs in Table 3 are based on the average module costs at two time points in FY00 for two separate UGR-A assemblers.

There are four cost factors listed for each ration. However, what each cost factor includes or excludes may vary depending on whether it is a depot assembled ration or commercial vendor assembled ration. The “component” cost factor is the only cost factor that is identical for all rations. This cost represents the actual procurement cost paid by DLA or the commercial assembler to acquire the items/components included in each type ration.

For the DLA depot assembled rations, the “assembly” cost factor includes the packaging material and labor costs incurred to assemble each type ration only. For these rations, the administrative costs to contract for or procure, receive, and store required module items or components are covered under the cost factor “DSCP surcharges.” In addition, with the depot assembled rations, distribution or transportation costs are not broken out separately but instead included within the DSCP surcharge factor.

The UGR-A is the only ration assembled by commercial vendors. For this ration, the “assembly” cost factor is more expansive and also covers the assemblers administrative costs to procure, receive, and store all require module items or components, in addition to the material and labor costs to actually assemble the UGRs. Also, with this ration, the distribution or transportation charged to distribute UGR-A’s from the assemblers’ facility to the destination installation are shown as a separate cost factor and not buried in the DSCP surcharge. UGR-A transportation charges vary by both meal menu and final destination. The distribution charges depicted for the UGR-A represents the average cost for two vendors across all menus and all contract destinations.

As shown in Table 3, the average total assembly, distribution, and DSCP surcharges per meal for the depot assembled rations are amazingly close at \$1.51 per “B”

Table 3. Summary of Ration Cost Factors (FY00)

Type Ration	Meals/Module	Cost Factor	Average Per Module Cost			Average Per Meal Cost			% Total Cost	% Food Cost
			Bkft	Dinner	Bkft/Din	Bkft	Din	Bkft/Din		
B-Ration	100	Components	\$207.59	\$229.79	\$218.69	\$2.08	\$2.30	\$2.19	59.2%	---
		Assembly(FOB Origin)	\$77.50	\$77.50	\$77.50	\$0.78	\$0.78	\$0.78	21.0%	35.4%
		Distribution	---	---	---	\$0.00	\$0.00	\$0.00	0.0%	0.0%
		DSCP Surcharges	\$69.54	\$76.98	\$73.26	\$0.70	\$0.77	\$0.73	19.8%	33.5%
Customer Cost		Customer Cost	\$354.63	\$384.27	\$369.45	\$3.55	\$3.84	\$3.69	---	68.9%
		Components	\$51.24	\$57.30	\$54.27	\$2.85	\$3.18	\$3.02	66.8%	---
		Assembly(FOB Origin)	\$8.84	\$8.84	\$8.84	\$0.49	\$0.49	\$0.49	10.9%	16.3%
		Distribution	---	---	---	\$0.00	\$0.00	\$0.00	0.0%	0.0%
Tray Ration	18	DSCP Surcharges	\$17.17	\$19.19	\$18.18	\$0.95	\$1.07	\$1.01	22.4%	33.5%
		Customer Cost	\$77.25	\$85.33	\$81.29	\$4.29	\$4.74	\$4.52	---	49.8%
		Components	\$162.42	\$145.52	\$153.97	\$3.25	\$2.91	\$3.08	66.0%	---
		Assembly(FOB Origin)	\$27.64	\$27.64	\$27.64	\$0.55	\$0.55	\$0.55	11.9%	18.0%
UGR-H/S	50	Distribution	---	---	---	\$0.00	\$0.00	\$0.00	0.0%	0.0%
		DSCP Surcharges	\$54.41	\$48.75	\$51.58	\$1.09	\$0.97	\$1.03	22.1%	33.5%
		Customer Cost	\$244.47	\$221.90	\$233.19	\$4.89	\$4.44	\$4.66	---	51.5%
		Components	\$71.85	\$99.96	\$85.91	\$1.44	\$2.00	\$1.72	60.1%	---
UGR-A	50	Assembly(FOB Origin)	\$38.83	\$37.05	\$37.94	\$0.78	\$0.74	\$0.76	26.5%	44.2%
		Distribution	\$6.18	\$6.18	\$6.18	\$0.12	\$0.12	\$0.12	4.3%	7.2%
		DSCP Surcharges	\$11.69	\$14.32	\$13.00	\$0.23	\$0.29	\$0.26	9.1%	15.1%
		Customer Cost	\$128.55	\$157.52	\$143.03	\$2.57	\$3.15	\$2.86	---	66.5%

Ration meal, \$1.50 per "Tray" ration meal, and \$1.58 per UGR-H/S meal. However, the DSCP surcharge applied to each of these rations, may not accurately reflect the actual costs incurred for each ration due to how DSCP determines and applies surcharges to determine customer costs. For these rations, and other rations or Class I items that DSCP procures, receives, stores, and issues; DSCP calculates one average rate by summing all applicable business costs (e.g. contracting, administrative support, inspections, quality control, distribution, receiving/storing/issuing, losses, etc) and dividing the resulting total by the total procurement cost incurred for all associated Class I items. This single surcharge rate is then applied uniformly to all component costs to determine the DSCP add-on surcharge for each item. For FY00, this surcharge rate was 33.5%. With this methodology, the "B" ration has the lowest DSCP surcharge (i.e. \$/meal) solely because the total price actually paid for it's components was less, and not necessarily because "less" costs were incurred to actually procure, receive, store, issue, or distribute the associated components.

Per DSCP, the assembly costs for the three depot assembled rations reflect the actual depot costs to assemble each ration. Referring to Table 3, average FY00 assembly costs were: \$0.49 per Tray Ration meal, \$0.55 per UGR-H/S meal, and \$0.78 per B-Ration meal. With 18 meals per Tray Ration module, 50 meals per UGR-H/S module, and 100 meals per "B" ration module, these DSCP assembly costs suggest that it is more efficient/less costly to assemble small modules and less efficient/more costly to assemble large modules. Based on simple logic, just the opposite would seem more likely or reasonable. Thus, perhaps other factors are influencing or impacting the per meal assembly costs. Potential other factors could include: variations in production quantities, assembly methods, and levels of automation utilized; utilization of different depots with varying direct work hour and overhead rates, etc.

As an example, the Tray Ration and the UGR-H/S are similar rations with the exception the Tray Ration provides 18 complete meals in 1 box and the UGR-H/S provides 50 complete meals in a set of 3 boxes. Each of these rations has about 13-15 different items per breakfast or dinner menu. Thus for assembly, the Tray Ration requires configuring and packing smaller quantities of 13 to 15 different items in one box, and the UGR-H/S requires configuring and packing larger quantities of only 4 to 5 different items in each of the three boxes. From a workload perspective, it would seem the UGR-H/S should be simpler, more efficient, and less labor intensive to assemble than the Tray Ration. However the DSCP assembly charge for the UGR-H/S is higher than the Tray Rations. Potential reasons could be one of those other factors mentioned earlier.

The UGR-A is the only ration that is assembled by commercial vendors under DSCP contracts and then directly delivered to the requesting installation. With this ration, the commercial vendor procures/receives the required ration components, assembles the modules, and delivers the assembled rations to the ordering installations. As a result the DSCP applied surcharge for this ration is much lower, 10% of the vendors component and assembly costs, which amounts to \$0.26 per meal or \$13.00 per module.

As shown in Table 3, component costs on average represent only 60% to 67% of the total customer cost for unitized ration modules. Other add-on costs to include DSCP surcharges and assembly costs inflate these costs by 50% to 69% to establish the actual customer costs. In addition, total add-on charges for the commercially assembled UGR-A which average \$1.14 per meal, are significantly less than those for the 3 depot assembled rations which average between \$1.50 and \$1.58. However, while lower, the UGR-A assembly, distribution, and DSCP surcharges, still result in a UGR-A customer cost that is 167% of actual component cost, a significant increase.

Analysis of Module Food Component Costs

Table 4 summarizes the average cost per meal by type component for the USMC Tray Ration and the UGR-H/S. These costs reflect procurement costs only, and exclude incremental assembly, distribution, or DSCP surcharges. As shown, the average total component cost is similar for both rations at \$3.02 per Tray Ration meal and \$3.08 per UGR-H/S meal. The tray component represents about 61% of the total component for each ration. Trays have 9 or 18 portions depending on menu item. Tray Ration module menus have 1 or 2 trays, or exactly 18 portions, of each tray menu item. For the UGR-H/S, each menu has 3 or 6 trays or 54 total portions or 4 extra portions of each tray menu item. The UGR-H/S could be resized to provide 54 complete meals by simply adding extra quantities of the lower cost non tray components (e,g, disposables, individual servings, etc). If done, the average cost per meal for the resulting UGR-H/S module would be \$2.94, or slightly less than that for the 18-meal Tray Ration meal. While the disposable and individual serving items represent only 15%-25% of the total component cost for each ration, they likely account for a higher percent of the rations overall assembly cost due to their higher quantities and resulting need to be counted out and sub assembled for each module.

From a cost perspective, since the tray items account for more than 60% of the total component cost for both the Tray Ration and UGR-H/S, the optimal module size for these type rations will be a multiple of 18, for example 18, 36, 54, or 72. Given the significant assembly costs associated with unitized rations, a promising module size for these rations would be 72-meals. Bulk trays items are packed 4 per case. With a module size of 72, the tray items could remain as full cases (1 or 2 cases of each tray item for each module), and only the other non-tray items would need be unitized into perhaps two other boxes. For distribution purposes, “unitized pallet loads” could be configured to include both cases of the tray items and the unitized boxes with the other menu items.

Logistical Impacts By Type Ration

Table 5 summarizes the logistical or transportation impacts generated by 10,000 meals of each type ration in terms of 20' container loads. These impacts exclude those generated by UHT milk, individual cold cereals, and shelf stable bread products which are issued separately and common to each ration. While 20' container loads are sized to

Table 4. Summary of Component Costs for the UGR-Heat/Serve (50 meals) and Tray Pack (18 meals) Modules

Type Component	Ration					
	Tray Pack (18)			UGR-H/S (50)		
	No. Items	\$/Meal	% Total	No. Items	\$/Meal	% Total
Trays	31	\$1.85	61.3%	31	\$1.88	60.9%
Pouches	1	\$0.02	0.8%	3	\$0.18	5.7%
#10s	4	\$0.14	4.5%	11	\$0.11	3.7%
Disposables	4	\$0.51	16.8%	4	\$0.41	13.4%
Individual Servings.	13	\$0.29	9.8%	3	\$0.08	2.8%
Other	5	\$0.21	6.9%	24	\$0.41	13.4%
Total	58	\$3.02	100.0%	76	\$3.08	100.0%
Adjusted Total	---	---	---	---	\$2.94	---

Table 5. Logistical Impact Data By Type Ration

Factor	Type Ration							
	Unitized B's		Trays	UGR-H/S		UGR-A's		
	Current	Modified		Current	Modified			
Ration Component	All	All	All	All	All	NP	Perish	All
Meals/Module	100	100	18	50	54	50	50	---
Modules/Pallet	2	4	24	8	8	12	33	---
Meals/Pallet	200	400	432	400	432	600	1,650	---
Ave Wt/Pallet	517	1,034	1,040	923	923+	745	775	---
Pallets/20' Container	30	20	20	20	20	20	20	---
Weight/Container	15,510	20,680	20,800	18,460	18,460+	14,900	15,500	---
Meals/Container	6,000	8,000	8,640	8,000	8,640	12,000	33,000	---
Containers/10,000 Bkft/Din Meals	3.3	2.5	2.3	2.5	2.3	1.7	0.6	2.3

hold 20 standard pallet loads, sometimes they are only loaded with 18 due to tight space constraints and difficulties in actually loading/fitting the last two pallets. This analysis is based on 20 pallet loads of each type ration per container load.

For the unitized B-rations the logistical impact is shown based on both the current and a modified pallet configuration. Unitized B-Rations, which consist of a set of six boxes, are presently configured 2 modules or 12 boxes per pallet. With this configuration, the pallets are stacked 3 high and each container load will hold 30 pallets or 60 modules. However, the boxes are the same size as those utilized by the Tray Ration and UGR-H/S which are configured at 24 boxes per pallet load. Thus for container transport, the unitized B's could be configured with 4 modules per pallet stacked 2 high or 20 pallets and 80 modules per container load. Therefore B-Ration logistical impact data is presented for both the current and the modified pallet load configuration. Also, the UGR-H/S is presently sized to provide 50 complete meals. As previously discussed, it could be reconfigured to provide 54 meals by simply including additional quantities of the non-tray components in the same set of 3 boxes per module. Therefore, UGR-H/S logistical impacts are depicted based on both 50 and 54 meals per module.

As shown in Table 5, the total logistical impact for the unitized B-Ration (modified), the Tray Ration, and UGR-H/S are all very similar at 2.3 to 2.5 non-refrigerated container loads per 10,000 meals. Interestingly, the UGR-A also generates an average total logistical impact of 2.3 container loads to include 1.7 non-refrigerated and 0.6 refrigerated container loads per 10,000 meals. While the logistic impact is constant across all menus for the B-Ration, Tray Ration, and UGR-H/S and the non-perishable component of the UGR-A, it varies by a significant factor of 5 for the perishable component of the UGR-A.

Analysis of Common Meal Components

For each group ration, several meal components are common (or similar) across all breakfast and/or dinner menus. In addition, many of these components are identical or at least similar across the various group rations. For each group ration, the common components across menus for breakfast and dinner meals are listed in Table 6. For example, five items are common for both breakfast and dinner meals for all group rations. These include: trays, dining packet, paper cups, trash bags, and creamer. However, the issue rate per meal may be slightly different between rations. For example, cups vary from 150% to 200% per meal and creamers vary from 36% to 50%. For the B-Ration, on alternate menu days, 100 creamers are placed in the breakfast or dinner module to yield the effective 50% issue rate. Other items are common for all menus within a ration type but may vary in form or size between rations. These include: hot sauce, which may be in bottles or individual pack; coffee, which may be in concentrate form, brick packs, cans, or instant individual portion packs; and (except for the B-Ration) some type of bulk or individual packs of jam, jelly, peanut butter/jelly, or peanut butter/jam packs which may vary in form, type, or flavor between rations and menu.

Table 6. Component Meal Components Across Ration Menus

Common Components	UGR-A Ration		UGR-H/S Ration		Tray Ration		B-Ration	
	Bkft	Din	Bkft	Din	Bkft	Din	Bkft	Din
Trays	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dining Packet(DP)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Paper Cups	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Trash Bags	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Creamers	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hot Sauce	Ind.	Ind (9/10)	Bulk (3/5)	Bulk	Indiv, Instant	Indiv, Instant	Bulk	Bulk
Coffee	4 oz bottle	4 oz bottle	brick (13 oz)	brick (13 oz)	Indiv, Instant	Indiv, Instant	Bulk (2 #)	Bulk (2 #)
Cocoa, Ind	Yes	Indiv (Note 1)	Yes	Yes	Yes	Yes	Yes	Yes
Jam or Jelly, Asst		Indiv (Note 1)		Indiv (Note 2)		Indiv (Note 3)		
Peanut Butter/Jelly				Indiv (Note 4)				
PB/Jelly or PB/Jam								
Peanut Butter							Indiv	
Vegetable Oil	1 bottle	1 bottle (70%)						
Pepper	1 shaker	1 shaker					2	2
Salt	1 shaker	1 shaker (30%)					2	2
Seasoning Salt	1 bottle	1 shaker (70%)						
Margarine	2 bags 18	1 bottle (70%)						
Catsup			1 box 12-16					
Tea								
Ave. Number Items/Meal	20	19	16	15	13	14	20	20

For a specific ration, several other items may also be common across all or most all menus for one or both type of meals. For the UGR-A menu, these include vegetable oil, pepper shakers, salt/seasoning salt shakers, margarine, and catsup. On average, each UGR-A module has 20 different items. However, about 14 items of these items are identical or very similar in nature across all menus resulting in about 6 unique items per menu. For the other rations, 50% or more of the items are also identical or similar in nature across each ration's menu. In addition, a significant percent of the items in each module are the same or similar across the three depot assembled rations to include the UGR-H/S, Tray Ration, and unitized B-Rations.

Other common required meal components like UHT bread, pouch bread, and individual cereal packs are provided as separate issues, and are not included in the unitized group rations. Instead they are simply issued as separate full case lots based on authorized issue rates and kitchen feeding strengths. Benefits of this approach include: lower module assembly charges, and increased flexibility to adjust issues to match actual consumption rates and minimize buildup of excess stocks forward if consumption rates for these items are lower than menu planning factors. For these same reasons, it is suggested these other smaller common components be assembled into a disposable/condiment pack and provided as a separate issue just like the UHT milk, pouch bread, and individual cereals. Since the components are regarded as common to all menus, the box could be sized for maximum assembly efficiency and to support any number of meals. While the current UGR-A and UGR-H/S modules provide 50 complete meals, the disposable/condiment box could be size to support 50, 100, 150, or any other number of meals. For example, the disposable/condiment box could be sized to support 100 group meals or 50 breakfast and 50 dinner UGR-A meals. In this case, for items that are common for both breakfast and dinner meals, the box would include quantities to support 100 total meals (e.g. 100 trays and two 4-oz bottles of coffee). For items that are common to only one type meal (e.g. 36 individual catsups per breakfast meal), then quantities for only 50 meals would be included. For items that are common to one meal but vary between menus, then the box would contain an assortment of the items to support 100 total meals. For example, each UGR-A breakfast menu includes 36 strawberry jams or 36 grape jellies, and each dinner menu includes 24 peanut butter/grape jelly or peanut butter (PB)/strawberry jelly. To provide this same assortment, each common disposable/condiment box would include: 18 strawberry jams, 18 grape jellies, 12 PB/grape jelly, and 12 PB/strawberry jelly. Another option would be to provide the common components in two separate packs, one for disposables and one for the other common components.

With a common disposable/condiment box, each resulting UGR-A breakfast or dinner module would on average include only 6 to 7 unique items. With this concept, the common disposable/condiment boxes would be configured as separate pallet loads, and loaded into each container to match the number of UGR meals included in the container load. This concept should simplified the UGR assembly process, reduce overall assembly costs, perhaps facilitate some automation or lower cost approximate fill (e.g. volumetric) methods instead of exact counts of many common items (e.g. number plates, dining packs, individual jelly or jam, etc.). In addition, a major benefit would be the

increased flexibility to match issues of the common items to actual demands and as a result reduce overall cost, and minimize buildup of excess stocks requiring disposal or retrograde.

Conclusions

Overall, current ration break policies and procedures result in higher total excess meal issues as module sizes (# meals/module) increase or as a force structure decides to set up and operate more but smaller company level field kitchens. This is due to current policies where ration break requirements are determined for each kitchen by dividing the kitchen's expected feeding strength for each meal period by the module size and rounding up to the next whole module. For both force structures, all module sizes, and current ration break policies, the use of company level kitchens results in significant increases in excess or over meal issues.

With current ration break policies, the number of modules a battalion is authorized will vary depending on how many field kitchens it decides to set-up and operate. For example, a Tank Battalion providing field feeding support to 627 total troops (see Table A-1) would be authorized 13 UGRs or 650 meals if it opts to utilize one consolidated kitchen, or 16 modules or 800 meals if it elected to establish and operate 5 company level kitchens instead. Thus authorized over meal issues for the Tank Battalion could range from 4% to 28% depending on many kitchens it elects to set-up and operate.

The number of kitchens and associated ration breaks, distribution of field kitchen feeding strengths, and average number of troops per field kitchen vary considerably depending on the extent each force opts to utilize consolidated or individual company level kitchens. For example, for the IBCT, the number of kitchens operated and supporting ration breaks can vary from 6 to 25. At the maximum use of consolidated kitchens, 67% (4 of 6) of the IBCT kitchens support 600+ troops each, which totals 78% of all IBCT troops. Conversely, with maximum use of company level kitchens, 84% of all kitchens support 200 or less troops each and 69% of all IBCT troops. Especially for kitchens supporting a large number of troops, large modules are better as they simplify the process and reduce the workload to breakdown or de-unitize the module components into common item piles prior to meal preparation and serving.

Significant incremental costs are incurred to assemble and produce the unitized group rations. The surcharges total 50% to 69%, depending on the ration, and result in a customer cost per module that is a high 150% to 169% of the actual component costs. The number of meals current depot assembled group modules provide vary considerably from 18 meals for the Tray Ration, 50 meals for the UGR-H/S, and 100 for the unitized B-Rations. Logically one would expect large modules to have lower per meal assembly costs and small modules to have higher per meal assembly costs. However, DSCP FY00 assembly charges for the depot assembled unitized rations are just the opposite with the 100 meal unitized B's having the highest assembly charge and the 18-meal Tray Ration

having the lowest assembly charge. However, from a total surcharge perspective, all depot assembled rations were amazingly close at \$1.52 to \$1.56 per meal.

Currently, common menu components like UHT milk, pouch bread, and individual cereal packs are not included within the assembled modules but instead provided as separate issues in full case lots. Benefits of providing these items separately include: lower per meal total assembly charges and the flexibility for units to adjust their orders for these items to match actual consumption, and as a result to reduce/avoid the build-up of excess stocks of these items at the unit level. However, several other items are also common (or very similar) across all meal menus, but are presently included within each module. Examples include the individual trays, dining packets, cups, trash bags, creamers, hot sauce, coffee, etc. With these items, the unit has no flexibility and as a result significant excess stocks may quickly build up at unit level if actual unit consumption rates are less than provided by the unitized group rations.

For both the UGR-H/S and Tray Rations, the tray items represent a very significant 61% of total component costs, while the common disposables are the second most costly at 13%-17% of total component costs. Given the significant cost of the tray component, from a cost perspective the optimal size for these rations will be a multiple of 18, since all trays include either 9 or 18 portions.

As presently packaged and configured, the current UGR-H/S, Tray Ration, and unitized B-Ration all generate approximately equivalent logistical impacts in terms of total non-refrigerated container loads per 10,000 meals. While the total containers generated by the UGR-A is approximately the same, it requires both non-refrigerated and refrigerated containers.

Recommendations

- Concept develop/prototype a unitized group ration with 72 meals that includes only the unique meal menu components and excludes the common meal components (e.g. trays, creamer, coffee, etc). With this concept each module will include a small number of unique menu components, on average 6, as compared to the current 16 to 20. This redesign should simplify the assembly process and in turn reduce overall assembly costs.
- Provide all of the common/similar meal module components in a separate condiment/disposable pack or in a separate condiment and a separate disposable pack. As described earlier, these packs would include all components that are common to both meals, only one meal (breakfast or dinner), most menus for one meal, etc. These packs can be sized for maximum assembly efficiency and do not need to match the actual number of meals in one module or a breakfast and dinner module combined since they will be issued as separate items. Benefits include reduced per meal assembly costs and the flexibility to adjust issue quantities to

match actual unit consumption rates and minimize excess stocks forward requiring retrograde and/or disposal.

- Reconsider current and evaluate alternative ration breakdown guidelines, policies, and procedures. Current guidelines and procedures can generate tremendous over meal issues if a battalion opts to use company level kitchens instead of one consolidated kitchens. For battalions, recommend ration breaks be established based on battalions total feeding strengths regardless of the number of kitchens it opts to operate. In addition, instead of establishing ration break requirements on a per unit per meal basis, determine them on a per unit per ration break basis. For example, with present policies, a two day ration break for a unit feeding 120 soldiers would include three modules of two breakfast menus and three modules of two dinner modules, or twelve modules total. With the recommended policy, the unit would be authorized three modules of one breakfast and one dinner menu, and only two modules of another breakfast and dinner menu, or 10 modules total.
- If the decision is not to adopt a module of size of 72, then at a minimum adjust the current UGR-H/S module to provide 54 meals. This easy modification would reduce per meal UGR-H/S costs by 5% per meal.

APPENDICES

Appendix A

Mechanized Infantry Division (TOE 87000A200): Analysis of Field Feeding Support Plan and Field Kitchen Ration Break Requirements

This Appendix details the field feeding support plan for a heavy Army Division and the resulting supported feeding strengths and ration break requirements by field kitchen. The representative heavy division analyzed was the Mechanized Infantry Division (TOE 87000200). In addition to the standard complement of command, combat, and combat support units, the selected division includes 5 Mechanized Infantry Battalions (BFV), 4 Armor Battalions (M1A2), and 2 Attack Helicopter Battalions (AH-64). Composition of the division in terms of subordinate squadrons, brigades, battalions, companies, and other smaller elements was extracted from the U.S. Army Force Management Support Agency Requirements Documentation Directorate (USAFMSA RDD) web page <http://www.usafmsardd.army.mil/>. This web page provides links to historical, current, and future Tables of Organization and Equipment (TOE) for all Army units. TOEs provide details relative to each unit's mission, capabilities, support requirements; authorized personnel to include position, quantity, and grade; and authorized equipment. For this analysis, unit strengths and authorized food service personnel and field feeding equipment were based on the most future Interim Change Proposal posted on the USAFMSA RDD web page to reflect all approved new equipment fieldings.

Within the division, most units are organized with an organic field feeding capability (equipment and cooks) at the company or battalion level. However a few units have no organic field feeding capability and depend entirely on one or more other divisional units for their group hot meal field feeding support. An example is the MP Company that supports the entire division and has several MP squadrons that disperse throughout the division area in support of other divisional units. MP Company elements typically deploy and attach to the Division Main Command Post, Division Rear Command Post, each Brigade Headquarters, and the Main Supply Battalion and other units to perform their divisional security, prisoner of war, traffic control, and other functions. When deployed, these elements are provided field feeding support by the unit they are supporting and attached to.

For units with an organic field feeding capability, some elements may still deploy remotely and attach to and be provided field feeding support by other units. Two examples include the Signal Battalion and the Military Intelligence Battalion, who have elements that deploy out, support, and attach to the division main command post and the three brigade headquarters for field feeding support. Thus a unit with an organic field feeding capability may provide field feeding support to all unit elements, only some unit elements, and any supporting attached elements attached from other units.

For this analysis, the field feeding support plan for the division is primarily based on a detailed review of Section I and Section II of the TOE's for each unit (e.g. brigade, squadron, battalion, company, etc) that comprise the division to include all subordinate units down to company, battery, and team level. Part I provides a descriptive summary of unit mission, capabilities, allocation or assignment, dependencies and required support from other units, and a listing of relevant doctrinal Field Manuals. Relative to field feeding, Section I often details how the unit is provided required field feeding support which could include an organic capability, a higher level battalion level kitchen, and/or one or more other units. In addition, it will detail whether the unit provides food service support to other units, if certain unit elements are typically deployed out and provided food service by another unit, or whether elements from other units are typically collocated and provided food service support by the unit. Part II details the authorized personnel in terms of position, military occupational specialty (MOS), grade/rank, and quantity. Relative to field feeding, Part II details the number of authorized food service personnel and type/quantity of authorized food service equipment, if any.

Army units are organized and equipped for both group "A" rations (UGR-A) and group "Heat-Serve" (UGR-H/S) rations. The "A" rations are perishable and require more cook preparation labor than the "Heat-Serve" rations, which are fully prepared and essentially require only heating, opening, and serving. Within a division, some battalions are staffed and equipped with only a battalion level "A" ration capability (e.g. Mechanized Infantry Battalion), other battalions and separate companies are staffed and equipped with a company (or battery) level "A" ration capability (e.g. Field Artillery Battalion), while other battalions are staffed and equipped with an intermediate (i.e. between battalion and company level) "A" ration capability (e.g. Signal Battalion). In general, each battalion and company with an organic field feeding capability has the capability to prepare "Heat-Serve" rations at company or battery level.

The Mechanized Infantry Battalion is an example of a battalion with a consolidated battalion level "A" ration capability and a company level Heat-Serve capability. This battalion is authorized 3 Mobile Kitchen Trailers (MKTs), 4 Kitchen Company Levels (KCLs), and 18 cooks. The battalion includes 1 Headquarters and Headquarters Company (HHC) and 4 Rifle Companies. The MKT's can be utilized to prepare "A" or "Heat-Serve" rations while the KCLs are only designed for Heat-Serve rations only. Per Section I of the HHC TOE, for "A" rations, the 3 MKTs are consolidated at the HHC and function as one kitchen to support all subordinate elements and any attached units. In addition, authorized staffing is based on the 3 MKTs functioning as one consolidated kitchen, and not 2 or 3 separate independent kitchens, which would require a higher total staffing. However, for "Heat-Serve" rations, the battalion has the equipment and staffing to facilitate either battalion level or company level ration preparation. With "Heat-Serve" rations, the battalion HHC could continue to support all subordinate units from the 3 consolidated MKTs. Another option would be for each Rifle Company to utilize one KCL to prepare their own rations, while the HHC utilized a MKT to prepare their rations. Therefore, with "Heat-Serve" rations, the battalion could opt to utilize one consolidated battalion level kitchen, or set-up and operate two, three, four, or five separate company level "Heat-Serve" kitchens or

preparation sites. The decision on how many "Heat-Serve" sites to set-up and operate would be up to each Commander and would depend on several factors to include the deployment, threat, mission, terrain, weather, etc.

For some units with multiple authorized MKTs, Section I of the TOE did not clearly specify whether they typically function as one consolidated kitchen or set-up and function as 2 or 3 three independent kitchens to provide "A" rations to supported elements. In these cases, authorized unit food service staffing levels, total supported troop strengths, and food service staffing criteria were analyzed to determine whether authorized staffing levels were sufficient to support only one consolidated kitchen or adequate to support 2 or 3 separate independent "A" ration kitchens. Based on this assessment, field feeding support assumption were generated and provided to CASCOM and the QMS for review and comment.

Table A-1 details the field feeding support plan and field kitchen locations for the Mechanized Infantry Division (TOE 87000A200) for "A" rations and for "Heat-Serve" rations with maximum use of company/battery level preparation. In this table, the top or bolded entries represent the field kitchen locations while the subordinate indented entries represent the units or elements of units provided food service support by each field kitchen. The first set of data is based on the divisions "A" ration preparation capability and assumed "A" ration kitchen sites and the second set of data is based on divisions "Heat-Serve" capability and maximum utilization of company and battery level "Heat-Serve" preparation. For example, the first "A" ration kitchen in Table A-1 indicates that a field kitchen operated at the Main Command Post, Headquarters and Headquarters Company (HHC), Infantry Division, is assumed to support various elements of the HHC and elements from six other divisional units or a total of 437 troops. As shown, with "Heat-Serve" rations, this kitchen is assumed to still support the same divisional elements and the same number of total troops, 437. In Table A-1, a supported unit without the marking "(-)" after the TOE number support the entire unit, while units with the marking "(-)" have only part of the unit being supported by the kitchen.

For a divisional unit where the field feeding support plan can change between "A" and "Heat-Serve" rations, see page 4 of Table A-1 and the Tank Battalion. As detailed, the division has 4 Tank Battalions and each battalion consists of 1 HHC and 4 Tank Companies. With "A" rations, each Tank Battalion operates one consolidated kitchen to support all subordinate units and 5 small attachments, or a total of 627 troops. With "Heat-Serve" rations, all subordinate units and attachments could continue to be supported from one consolidated kitchen operated at the HHC, or each company could utilize a MKT or KCL to prepare their own rations. With the company level kitchen operations, each battalion could operate 5 separate kitchens to include 1 at the HHC to support 359 troops and 1 with each Tank Company supporting 67 troops. Since field feeding support plans can vary between Tank Battalions for UGR-H/S s, the 4 Tank Battalions could set-up and operate anywhere from 4 to 20 separate kitchen sites.

[Note: While Tank Battalions and Mechanized Infantry Battalions will often cross attach line companies and form combined arms teams, this analysis was based on pure

battalions since the total number of division kitchens and thus overall total ration break requirements will be relatively unaffected. Even with cross attachments, the total authorized UGR modules should remain approximately the same.]

As summarized at the end of Table A-1, the division will likely operate 55 separate "A" ration kitchens to support all division personnel, while with "Heat-Serve" rations, it could operate any where from 55 to 103 separate kitchens depending on the extent to which units opt to utilize consolidated or company/battery level kitchens. The division's total authorized strength is 17,684 troops. In addition, each of the 4 Medical Companies has a capacity to hold and treat 40 patients. Therefore, for this analysis, the total estimated ration break requirements are based on an estimated total feeding requirement of 17,844

Actual field feeding support plans for the division or any force structure will vary from deployment to deployment and even from day to day for a given deployment depending on a host of factors to include: theater maturity, terrain, logistical constraints, mission, threat, weather, and how units and elements deploy, locate, and attach out/collocate with other units to provide required support to divisional missions. Thus the field feeding support plan detailed in Table A-1 does not represent an absolute support plan, but rather only a representative, reasonable, or typical field feeding support plan for the purpose of evaluating alternative module sizes in terms of overall issues, , and total cost and logistical impacts.

On a by unit basis, Table A-2 summarizes all of the relevant field feeding information and assumptions to derive the divisional field feeding support plans detailed in Table A-1. Most of the information relative to how/where the battalion or company operates kitchens, elements attached out to other units for feeding support, units attached for field feeding support, etc, was extracted from Part I of the each unit TOEs. Data relative to authorized cooks and food service equipment was extracted from Part II of the unit TOEs. Based on this information, food service personnel staffing criteria, and input provided by CASCOM, various assumptions were made relative to where "A" ration kitchens would most typically set-up and which units and elements would be supported from each. For "Heat-Serve" rations, the maximum number of potential Heat-Serve kitchens was assumed to be the minimum of the combined total number of MKTs and KCLs, and the number of supported companies or batteries. For example, the Infantry Battalion has 1 HHC and 4 Rifle Companies and is authorized 3 MKTs and 4 KCLs. Therefore it was assumed that the Infantry Battalion could operate 1 consolidated field kitchen or up to 5 separate company level "Heat-Serve" kitchens. All required assumptions for the Table A-1 field feeding support plan are detailed in Table A-2.

The current UGR -A and UGR-Heat/Serve are assembled into 50 person meal modules which provide all of the components to include food items and disposables for one meal for 50 people. For ration breaks, the number of modules authorized is determined on a kitchen by kitchen basis by dividing the number of troops supported by each kitchen by the module size, 50, and then rounding up to the next whole module. For

example a unit supporting 100 troops would be authorized 2 modules or 100 total meals while a unit supporting 101 troops would be authorized 3 modules or 150 total meals.

The number of modules authorized a specific unit will depend on whether the unit decides to operate a single battalion size kitchen or multiple company level kitchens. For example, the Tank Battalion consists of one Headquarters Company and 4 Tank Companies (see Table A-1, page 4). With UGR-Heat/Serves, the Tank Battalion can operate one consolidated battalion level kitchen to support all subordinate units and attachments. In this case, the single kitchen would support 627 total troops and be authorized 13 50-person meal modules. However, the Tank Battalion could elect to set-up and operate up to five company level kitchens. In this case, the Headquarters and Headquarters Company kitchen would support 359 troops and be authorized 8 modules, and the 4 Tank Company kitchens would each support 67 troops and be authorized 2 modules resulting in a total authorization of 16 modules for the battalion. Thus a Tank Battalion, providing field feeding support to 627, could be authorized and issued from 13 to 16 modules, or 650 to 800 total meals, depending on how many separate kitchen sites it elected to utilize to prepare the Heat-Serve rations.

Table A-3 summarizes the ration break module requirements for various size modules when field feeding support to divisional units is provided according to the UGR-A kitchen sites detailed in Table A-1. From these sites, the kitchens could prepare and provide either UGR-A or UGR-Heat/Serves. For example, referring to the first entry in the Table A-3, one field kitchen operates at the Main Command Post, Headquarters and Headquarters Company, Infantry Division (Mechanized) to provide field feeding support to 437 total troops. As shown, depending on module size, this single kitchen would be authorized 25 18-meal modules, 13 36-meal modules, 9 50-meal modules, 9 54-meal modules, or 7 73-meal modules. When there are multiple identical field kitchens, the authorized modules depicted represent the total modules for all similar field kitchens. For example, the division has 5 Infantry (Mech) Battalions and UGR-As for each battalion are provided from a consolidated field kitchen operated at the Headquarters and Headquarters Company (HHC). Referring to Table A-3, each HHC, Infantry (Mech) Battalion kitchen provides field feeding support to 827 troops and 4,135 troops overall (5 Battalions). The number of modules shown represents the total modules for the 5 consolidated kitchens supporting a total of 4,135 troops. As shown, depending on module size, this would be 230 18-meal modules, 115 36-meal modules, 85 50-meal modules, 80 54-meal modules, or 60 72-meal modules.

As shown at the end of Table A-3, for UGR-A kitchens, the Mechanized Infantry Division is likely to set-up and operate 55 separate kitchens to support an overall or total feeding strength of 17,844 troops to include a potential 160 total patients. As expected and as summarized at the end of Table A-3, as the module size increases, the total number of modules authorized decreases, and the total meals issued and percent increases.

Table A-4 is similar to Table A-3 and provides the same data based on the maximum utilization of Company or Battery level Heat-Serve operations. Table A-4 is

based on the field feeding support and kitchen data in Table A-1 under the column heading "Max UGR-H/S Kitchen Sites." For some units, the resulting field feeding support plan is the same as for the UGR-A kitchen sites. An example is the Main Command Post, Headquarters and Headquarters Company, Mechanized Division, where the kitchen and field feeding support plan in both cases supports 437 troops. For other units, the field feeding support plan for UGR-H/Ss can be significantly different than that for UGR-As. For example, for UHR-As, each Tank Battalion supports all subordinate elements from one consolidated battalion level kitchen operated at the HHC. With UGR-H/Ss, the battalion could opt to continue to support all subordinate elements from one consolidated battalion level kitchen, or it could opt to set 2, 3, 4, or up to 5 separate company level Heat-Serve kitchens. As summarized at the end of Table A-4, the maximum number of potential UGR-H/S preparation sites is 103. Thus the number of actual UGR-H/S preparation sites could vary from a minimum of 55 to a maximum of 103. In general, as the number of kitchens increase, the number of ration breaks increase, the average number of troops supported per kitchen/break decreases, and the resulting total increase. Thus the over issue rates summarized at the end of Table A-4, represents maximum as a function of module size with 103 kitchens and ration breaks. If the division set-up and operated 79 kitchens, then would likely be about half way between those presented in Table A-3 for 54 kitchens and in Table A-4 for 103 kitchens.

Table A-5 lists the 55 UGR-A kitchen sites detailed in Table A-1 in terms of supported feeding strengths from smallest to largest. Also detailed for each kitchen size, are the cumulative percent of total kitchens and cumulative percent of total troops supported. Table A-6 summarizes similar type information based on the maximum 103 separate UGR-H/S preparation sites.

Table A-1. Mechanized Infantry Division (TOE 87000A200) Field Kitchens, Supported Units, and Feeding Strengths

Field Kitchen Location and Supported Units	UGR-A Kitchen Sites			Max UGR-H/S Kitchen Sites		
	Units/ Kitch.	Feeding Strength/ Kitchen	Total	Units/ Kitch.	Feeding Strength/ Kitchen	No. Feeding Strength
87004A200 Main Cmd Post, HHC, Inf Div (M)						
87004A200(-) Tac Cmd Post (sec 1-4), HHC, Inf Div (M)	1	23	1	23	1	23
87004A200(-) Cmd Group (sec 5), HHC, Inf Div (M)	1	7	1	7	1	7
87004A200(-) Main Group (Sec 6-26), HHC, Inf Div (M)	1	108	1	108	1	108
19333L000(-) MP GS Plt (Hq+2 Sqds), MP Co	1	21	1	21	1	21
19333L000(-) Hqtrs Sec (Sec 2), MP Co	1	21	1	21	1	21
19333L000(-) Cmbt Medic Sec, MP Co	1	7	1	7	1	7
11066L000(-) Div Sig Office, HHC, Signal Bn	1	24	1	24	1	24
11066L000(-) Div COMSEC Office, HHC, Signal Bn	1	4	1	4	1	4
05332L000 HHD, Engineer Brigade	1	57	1	57	1	57
03157L200(-) Chemical Co	1	104	1	104	1	104
06302L000(-) FSE (Sec 5), HHB, Div Arty	1	20	1	20	1	20
12113L000 Div & Army Band (DS)	1	41	1	41	1	41
87004A200 Rear Cmd Post, HHC, Inf Div (M)						
87004A200(-) Rear (Sec 27-38), HHC, Inf Div	1	154	1	154	1	154
19333L000(-) Div Ops Sec, MP Co	1	6	1	6	1	6
03157L200(-) Recon Team, Chem Co	1	3	1	3	1	3
03157L200(-) Decon Sqd, Chem Co	2	6	2	6	2	6
03157L200(-) Smoke Team, Chem Co	1	3	1	3	1	3
19333L000 MP Co, Hvy Div						
11066L400 HHC, Signal Bn (6 Node) MSE						
11066L400(-) HHC, Sig Bn (6 Node) (MSE)	1	212	1	212	1	133
11067L100(-) Area Sig Co, Sig Bn (MSE)(excl 1 Nodal Pltn)	1	79	1	110	0	79
11068L400(-) Hqtr Sec, Sig Spt Co, Sig Bn (MSE)	1	23	1	23	1	23

Table A-1. Mechanized Infantry Division (TOE 87000A200) Field Kitchens, Supported Units, and Feeding Strengths (Cont'd)

Field Kitchen Location and Supported Units	UGR-A Kitchen Sites					Max UGR-H/S Kitchen Sites				
	Units/ Kitch.	Feeding Strength/ Kitchen	No. Kitch.	Total Feeding Strength	Units/ Kitch.	Feeding Strength/ Kitchen	No. Kitch.	Total Feeding Strength		
11067L100 Area Signal Co, Signal Bn	1	79	1	79	1	79	1	79	3	237
11067L100(-) Area Sig Co, Sig Bn (MSE)(excl 1 Nodal Pltn)										
11068L400 Signal Support Co, Signal Bn	1	180	1	180	1	180	1	180	1	101
11068L400(-) Sig Spt Co, Sig Bn (MSE) (excl Hqtr Sec)										
11067L100(-) Area Sig Co, Sig Bn (MSE)(excl 1 Nodal Pltn)	1	79	1	79	0	79	0	79	1	101
44176A000 HHB,ADA Bn	1	477	1	477	1	477	1	477	1	156
44176A000 HHB, ADA Bn	1	156	1	156	1	156	1	156	1	156
44177A000 ADA Btry (SFV/MPADS)	3	107	0	107	0	107	0	107	0	107
44178A000 ADA Btry (Avenger)	0	136	0	136	0	136	0	136	0	136
44177A000 ADA Btry (SFV/MPADS)	0	0	0	0	1	136	1	136	1	321
44177A000 ADA Btry (SFV/MPADS)	0	107	0	107	1	107	1	107	1	107
44178A000 ADA Btry (Avenger)	1	136	1	136	1	136	1	136	1	136
44178A000 ADA Btry (Avenger)	1	136	1	136	1	136	1	136	1	136
05333L000 HHD, Engineer Brigade	0	0	0	0	0	0	0	0	0	0
05336L000 HHC, Eng Bn, Hvy Div	1	446	3	1,338	1	446	3	1,338	3	1,338
05336L000 HHC, Eng Bn, Hvy Div	1	137	1	137	1	137	1	137	1	137
05337L000 Eng Co, Eng Bn, Hvy Div	3	103	3	103	3	103	3	103	3	103
05337L000 Eng Co, Eng Bn, Hvy Div	0	103	0	103	0	103	0	103	0	103
05337L000 Eng Co, Eng Bn, Hvy Div										

Table A-1. Mechanized Infantry Division (TOE 87000A200) Field Kitchens, Supported Units, and Feeding Strengths (Cont'd)

		UGR-A Kitchen Sites			Max UGR-H/S Kitchen Sites		
		Feeding Units/ Kitch.	Total No. Kitchen	Feeding Kitch. Strength	Units/ Kitch.	Strength/ Kitchen	No. Feeding Kitch. Strength
Field Kitchen Location and Supported Units							
34396L000 HH&O Co, MI Bn		199	1	199	1	167	1
34396L000(-) HH&O Co, MI Bn (less 3 Intel Process + 3 SAT Comm Tms)		1	167		1	167	
34398A000(-) MI Co (Gen Spt), MI Bn (less 3 Elec War Tms)		1	32		0	32	
34397A000 MI Co (DS), MI Bn		0	0	0	0	0	0
34398A000 MI Co (GS), MI Bn		0	0	0	0	32	1
34398A000(-) MI Co (Gen Spt), MI Bn (less 3 Elec War Tms)		0	32		1	32	
03157L200 Chemical Co		0	0	0	0	0	0
87042L200 HHC, Armor Brigade		248	1	248	1	248	1
87042L200 HHC, Armored Brigade		1	82		1	82	
06366A400/500(-) Mvr Bde FSE		1	7		1	7	
19333L000(-) MP Fwd Spt Plt (Hq+2Sqds), MP Co		1	21		1	21	
34396L000(-) Sat Com Tr, HH&O Co, MI Bn		1	3		1	3	
34396L000(-) Intel Process Tr, HH&O Co, MI Bn		1	6		1	6	
34397A000 MI Co (Dir Spt), MI Bn		1	43		1	43	
34398A000(-) Elec Warfare Tr, MI Co (Gen Spt)		1	8		1	8	
03157L200(-) Recon Tr, Chem Co		1	3		1	3	
03157L200(-) Decon Sqd, Chem Co		2	6		2	6	
03157L200(-) Smoke Tr, Chem Co		1	3		1	3	
11067L100(-) Nodal Pltn, Area Signal Company		1	1		1	1	
			60			60	

Table A-1. Mechanized Infantry Division (TOE 87000A200) Field Kitchens, Supported Units, and Feeding Strengths (Cont'd)

Field Kitchen Location and Supported Units	UGR-A Kitchen Sites				Max UGR-H/S Kitchen Sites			
	Units/ Kitch.	Feeding Strength/ Kitchen	No. Feeding Kitchen	Total Feeding Strength	Units/ Kitch.	Feeding Strength/ Kitchen	No. Feeding Kitchen	Total Feeding Strength
87042L100 HHC, Inf (Mech) Brigade								
87042L100 HHC, Inf (M) Brigade	1	81	2	494	1	247	2	494
06366A400/500(-) Mvr Bde FSE	1	7			1	81		
19333L000(-) MP Fwd Spt Plt (Hq+2 Sqds), MP Co	1	21			1	7		
34396L000(-) Sat Com Tm, HH&O Co, MI Bn	1	3			1	21		
34396L000(-) Intel Process Tm, HH&O Co, MI Bn	1	6			1	3		
34397A000 MI Co (Dir Spt), MI Bn	1	43			1	6		
34398A000(-) Elec Warfare Tm, MI Co (Gen Spt)	1	8			1	43		
03157L200(-) Recon Tm, Chem Co	1	3			1	8		
03157L200(-) Decon Sqd, Chem Co	2	6			1	3		
03157L200(-) Smoke Tm, Chem Co	1	3			1	6		
11067L100(-) Nodal Pltn, Area Signal Company	1	60			1	3		
						1	60	
17376L000 HHC, Tank Bn								
17376L000 HHC, Tank Bn	1	353	4	2,508	1	359	4	1,436
17377L000 Tank Co, Tank Bn	4	63			1	353		
06366A400/500(-) Mvr Bn FSE, HHB FA BN	1	6			0	63		
06366A400/500(-) Tank Co FIST Tm, HHB FA Bn	4	4			1	6		
					0	4		
17377L000 Tank Co, Tank Bn								
17377L000 Tank Co, Tank Bn	0	63	0	0	1	67	16	1,072
06366A400/500(-) Tank Co FIST Tm, HHB FA Bn	0	4			1	63		
					1	4		
07246L200 HHC, Inf Bn (BFV)								
07246L200 HHC, Inf Bn (BFV)	1	349	5	4,135	1	355	5	1,775
07247L200 Rifle Co, Inf Bn (BFV)	4	108			1	349		
06366A400/500(-) Mvr Bn FSE, HHB FA BN	1	6			0	108		
06366A400/500(-) MI Co FIST Tm, HHB FA Bn	4	10			1	6		
					0	10		

Table A-1. Mechanized Infantry Division (TOE 87000A200) Field Kitchens, Supported Units, and Feeding Strengths (Cont'd)

Field Kitchen Location and Supported Units	UGR-A Kitchen Sites				Max UGR-H/S Kitchen Sites			
	Units/ Kitch.	Feeding Strength/ Kitchen	No. Kitch.	Total Strength	Units/ Kitch.	No. Kitch.	Total Strength	Feeding Strength/ Kitchen
07247L200 Rifle Co, Inf Bn (BFV) 07247L200 Rifle Co, Inf Bn (BFV) 06366A400/500(-) MI Co FIST Tm, HHB FA Bn	0 0	108 10	0 0	0	1 1	1 1	108 10	118 20
06302L000 HHB, Divy Arty 06302L000(-) HHB, Divy Arty (excl FSE's and FISTS)	1	137 161	1	137	1	1	137 161	137 1
06366A400 HHB FA Bn 155SP Plt Ops HD [BN 06365A400] 06366A400(-) HHB FA Bn 155SP Plt Ops HD [Bn 06365A400]	1	114 114	1	114	1	1	114 114	114 1
06367A200 FA Btry 155SP (1x6) Plt Op [BN 06365A400] 06367A200 FA Btry 155SP (1x6) Plt HD	1	93 93	3	279	1	1	93 93	3 279
06369A200 Svc Btry, 155 SP Plt Ops HD [Bn 06365A400] 06369A200 Svc Btry 155SP Plt Ops HD	1	132 132	1	132	1	1	132 132	1 132
06366A500 HHB FA Bn 155SP Plt Ops HD [BN 06365A500] 06366A500(-) HHB, FA Bn 155SP Plt Ops HD [Bn 06365A500]	1	116 116	2	232	1	1	116 116	2 232
06367A200 FA Btry 155SP (1x6) Plt Op [BN 06365A500] 06367A200 FA Btry 155SP (1x6) Plt Op	1	93 93	6	558	1	1	93 93	6 558
06369A200 Svc Btry, 155 SP Plt Ops HD [Bn 06365A500] 06369A200 Svc Btry, 155 SP Plt Ops HD	1	132 132	2	264	1	1	132 132	2 264
06396A000 HHS FA Bn MLRS 06396A000 HHS FA Bn MLRS 09018A000(-) MLRS Support Tm(-), Elec Mnt Co, MSB	1	113 99 14	1	113	1	1	113 99 14	1 113

Table A-1. Mechanized Infantry Division (TOE 87000A200) Field Kitchens, Supported Units, and Feeding Strengths (Cont'd)

Field Kitchen Location and Supported Units	UGR-A Kitchen Sites				Max UGR-H/S Kitchen Sites			
	Units/ Kitch.	Feeding Strength/ Kitchen	No. Kitchen	Total	Feeding Strength/ Kitchen	Units/ Kitchen	No. Kitchen	Total
06397A000 FA Btry, FA Bn MLRS	1	120	2	240	1	120	2	240
06397A000 FA Btry, FA Bn MLRS	1	114	2		1	114	2	
09018A000(-) MLRS Support Tm, Elect Maint Co, MSB	3				3		2	
06399A000 TAB FA Bn MLRS	1	76	1	76	1	76	1	76
06399A000 TAB FA Bn MLRS	1	76	1	76	1	76	1	76
01302A000 HHC, Div Avn Bde	1	95	1	95	1	95	1	95
01302A000 HHC, Div Avn Bde	1	91	1	91	1	91	1	91
06302L000(-) Avn Bde FSE, HHB, DIVARTY	1	4			1	4		
01306A200 HHC, GS Avn Bn	1	321	1	321	1	321	1	321
01306A200 HHC, GS Avn Bn	1	124	1	124	1	124	1	124
01307A200 Support Avn Co (UH-60), GS Avn Bn	2	35		35	2	35		35
01308A200 Command Avn Co, GS Avn Bn	1	58		58	1	58		58
01309A200 Avn Unit Maint Co (AVUM), GS Avn Bn	1	69		69	0	69		69
01307A200 Support Avn Co (UH-60), GS Avn Bn	0	0	0	0	0	0	0	0
01308A200 Command Avn Co, GS Avn Bn	0	0	0	0	0	0	0	0
01309A200 Avn Unit Maint Co (AVUM), GS Avn Bn	0	0	0	0	1	69	1	69
01309A200 Avn Unit Maint Co (AVUM), GS Avn Bn	0	0	0	0	1	69	1	69
01386A200 HHC, Avn Attack Bn (AH-64)	329	2	658		217		2	434
01386A200 HHC, Attack Bn (AH-64)	1	134			1	134		
01387A200 Attack Co, Attack Bn (AH-64)	3	27			3	27		
01389A200 Avn Unit Maint Co (AVUM), Attack Bn (AH-64)	1	112			0	112		
06302L000(-) Attk Heli Bn FSE	1	2			1	2		

Table A-1. Mechanized Infantry Division (TOE 87000A200) Field Kitchens, Supported Units, and Feeding Strengths (Cont'd)

Field Kitchen Location and Supported Units	UGR-A Kitchen Sites				Max UGR-H/S Kitchen Sites			
	Units/ Kitch.	Feeding Strength/ Kitchen	No. Kitch.	Total Strength	Units/ Kitch.	Feeding Strength/ Kitchen	No. Kitch.	Total Strength
01387A200 Attack Co, Attack Bn (AH-64)	0	0	0	0	0	0	0	0
01389A200 Avn Unit Mnt Co (AVUM), Attack Bn (AH-64)	0	0	0	0	1	112	2	224
01389A200 Avn Unit Mnt Co (AVUM), Attack Bn (AH-64)	0	0	0	0	1	112	2	224
17286L000 HHT Div Cav Sqdn	650	1	650	1	224	1	224	224
17286L000 HHT Div Cav Sqdn	1	220	1	220	1	220	1	220
06302L000(-) Cav Sqd FSE, HHB, DIVARTY	1	4	1	4	1	4	1	4
17287L000 Cav Trp, Cav Sqdn	3	134	0	134	0	0	0	134
06302L000(-) Cav Trp FIST, HHB, DIVARTY	3	4	0	4	0	0	0	4
09018A000(-) Mnt Spt Tm, Land Cbt Mnt Sec, Elec Mnt Co, M	3	4	0	4	0	0	0	4
01367A200 Air Recon Trp (OH-58D)	0	27	0	27	0	0	0	27
01369A200 Avn Svc Trp (OH-58D)	0	73	0	73	0	73	0	73
					0	0	0	426
17287L000 Cav Trp, Cav Sqdn	0	134	0	134	1	134	1	134
17287L000 Cav Trp, Cav Sqdn	0	134	0	134	1	134	1	134
06302L000(-) Cav Trp FIST, HHB, DIVARTY	0	4	0	4	1	4	1	4
09018A000(-) Mnt Spt Tm, Land Cbt Mnt Sec, Elec Mnt Co, M	0	4	0	4	1	4	1	4
01367A200 Air Recon Trp (OH-58D)	0	0	0	0	0	0	0	0
01369A200 Avn Svc Trp (OH-58D)	127	1	127	1	127	1	127	127
01369A200 Avn Svc Trp (OH-58D)	1	73	1	73	1	73	1	73
01367A200 Air Recon Trp (OH-58D)	2	27	2	27	2	27	2	27
63002L000 HHC/MMC, Spt Bn, Hvy Div	240	1	240	1	240	1	240	240
63002L000 HHC/MMC, Spt Cmd Hvy Div	1	219	1	219	1	219	1	219
19333L000(-) MP GS Plt (Hq + 2 Sqds), MP Co.	1	21	1	21	1	21	1	21

Table A-1. Mechanized Infantry Division (TOE 87000A200) Field Kitchens, Supported Units, and Feeding Strengths (Cont'd)

Field Kitchen Location and Supported Units	UGR-A Kitchen Sites			Max UGR-H/S Kitchen Sites		
	Units/ Kitch.	Feeding Strength/ Kitchen	Total Feeding Strength	Units/ Kitch.	Strength/ Kitchen	No. Feeding Kitch.
63886A000 HSC, Spt Bn (Avn)	606	1	606	606	1	606
63886A000 HSC, Spt Bn (Avn)	1	120	120	1	120	1
43888A000 Ground Mnt Co, (DASB)	1	181	181	1	181	1
43888A000 Ground Mnt Co, (DASB)	1	234	234	1	234	1
01933A200 AMC, DASB (AH64/OH58D)	1	65	65	1	65	1
01533AA00 AMC Repair Tm (AH64/24)	1	6	6	1	6	1
01533AC00 EETF Aug Team						
43888A000 Ground Mnt Co, (DASB)	0	0	0	0	0	0
01933A200 AMC, DASB (AH64/OH58D)	0	0	0	0	0	0
01533AA00 AMC Repair Tm (AH64/24)	0	0	0	0	0	0
01533AC00 EETF Aug Team	0	0	0	0	0	0
63006L000 HHD, Fwd Spt Bn (2x1), Hwy Div [BN 63005L100]	490	1	490	490	1	490
63006L000 HHD, Fwd Spt Bn, Hwy Div	1	50	50	1	50	1
42008L000 QM Sup Co, Fwd Spt Bn	1	54	54	1	54	1
43009L000 Mnt Co, Fwd Spt Bn	1	184	184	1	184	1
43510LA00 Tank System Spt Team	2	28	28	2	28	2
43510LB00 Inf (Mech) Sys Spt Tm	1	17	17	1	17	1
08058L100 Med Co, FSB, Hwy Div	1	85	85	1	85	1
08058L100+ Med Co, FSB, Hwy Div (patients)	1	40	40	1	40	1
42007L000(-) Water Point Team, Supply Co, MSB	1	4	4	1	4	1
42008L000 QM Sup Co, Fwd Spt Bn (BN 63005L100 or BN 63005L300)	0	0	0	0	0	0
42009L000 Mnt Co, Fwd Spt Bn (BN 63005L100 or BN 63005L300)	0	0	0	0	0	0

Table A-1. Mechanized Infantry Division (TOE 87000A200) Field Kitchens, Supported Units, and Feeding Strengths (Cont'd)

Field Kitchen Location and Supported Units	UGR-A Kitchen Sites			Max UGR-H/S Kitchen Sites		
	Feeding Units/ Kitch.	Total Strength/ Kitchen	No. Kitch.	Feeding Units/ Kitchen	Strength/ Kitchen	No. Kitch.
43510LA00 Tank System Spt Team {BN 63005L100 or BN 63005L300]	0	0	0	0	0	0
43510LB00 Inf (Mech) Sys Spt Tm {BN 63005L100 or BN 63005L300]	0	0	0	0	0	0
08058L100 Med Co, FSB, Hwy Div {BN 63005L100 or BN 63005L300]	0	0	0	0	0	0
63006L000 HHD, Fwd Spt Bn (1x2), Hwy Div [BN 63005L300]	485	2	970	485	2	970
63006L000 HHD, Fwd Spt Bn, Hwy Div	1	50	1	50	1	50
42008L000 QM Sup Co, Fwd Spt Bn	1	54	1	54	1	54
43009L000 Mnt Co, Fwd Spt Bn	1	184	1	184	1	184
43510LA00 Tank System Spt Team	1	28	1	28	1	28
43510LB00 Inf (Mech) Sys Spt Tm	2	17	2	17	2	17
08058L100 Med Co, FSB, Hwy Div	1	85	1	85	1	85
08058L100+ Med Co, FSB, Hwy Div (patients)	1	40	1	40	1	40
43510LC00 Missile Sys Spt Tm	1	6	1	6	1	6
42007L000(-) Water Point Team, Supply Co, MSB	1	4	1	4	1	4
43510LC00 Missile Sys Spt Tm	0	0	0	0	0	0
63136L000 HHD, MSB, Hwy Div	945	1	945	945	1	945
63136L000 HHD, MSB, Hwy Div	1	77	1	77	1	77
19333L000(-) MP GS Plt (Hq + 2 Sqds), MP Co.	1	21	1	21	1	21
42007L000(-) Supply Co, MSB, Hwy Div	1	140	1	140	1	140
55188L000 TMT Co, MSB, Hwy Div	1	252	1	252	1	252
43008A000 Hwy Mnt Co, MSB, Hwy Div	1	143	1	143	1	143
09018A000(-) Electr Mnt Co	1	142	1	142	1	142
08057L000 Medical Co, MSB, Hwy Div	1	130	1	130	1	130
08057L000+ Medical Co, MSB, Hwy Div (patients)	1	40	1	40	1	40

Table A-1. Mechanized Infantry Division (TOE 87000A200) Field Kitchens, Supported Units, and Feeding Strengths (Cont'd)

Field Kitchen Location and Supported Units	UGR-A Kitchen Sites				Max UGR-H/S Kitchen Sites			
	Units/ Kitch.	Strength/ Kitchen	No. Kitch.	Total Feeding Strength	Units/ Kitch.	Strength/ Kitchen	No. Kitch.	Total Feeding Strength
42007L000 Supply Co, MSB, Hvy Div	0	0	0	0	0	0	0	0
55188L000 TMT Co, MSB, Hvy Div	0	0	0	0	0	0	0	0
43008A000 Hvy Mnt Co, MSB, Hvy Div	0	0	0	0	0	0	0	0
09018A000 Electr Mnt Co	0	0	0	0	0	0	0	0
08057L000 Medical Co, MSB, Hvy Div	0	0	0	0	0	0	0	0
12113L000 Div and Army Band (DS)	0	0	0	0	0	0	0	0
Division Totals	55	17,844			103	17,844		
Less Patients				160			160	
Division Strength				17,684			17,684	

**Table A-2: Field Feeding Notes and Assumptions for TOE 87000A200
Mechanized Infantry Division Units (4-M1, 5-BFVS, 2 AHB)**

TOE	Field Feeding Support Plan and Assumptions
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87004A200 HHC, Inf Div (Mech)

The division HHC operates 3 separate Command Posts (CPs) to include: Tactical CP (Sec 1-4), Main CP (Sec 5-26), and Rear CP Sec 27-38). The tactical CP is small and operates forward of the brigade rear boundary and frequently moves. The Main CP and Rear CP are larger and located forward of the division rear boundary. The HHC has 3 food service teams and 3 MKTs and is capable of setting up and operating field kitchen in three separate locations. This will most likely occur during unit moves. For this analysis, it was assumed the division HHC normally operates field kitchens in 2 locations, the Main CP and the Rear CP with the Tactical CP provided food service support by the Main CP. Ration break requirements were determined for each kitchen based on supported strengths and then summed to determine total HHC requirements.

In addition to unit personnel, the HHC, Inf Div (Mech) kitchens provide feeding support to the MP Co (TOE 19333L000), the Division Band (TOE 12113L000), the Chemical Company (TOE 03157L200) and attached elements of other units.

19333L000 MP Company

The MP Co supports the entire division and has no organic food service capability. Food service support is primarily provided by HHC, Inf Div(M). The MP Co has 6 MP Platoons to include 3 division support and 3 forward support platoons. The 3 division support platoons support the division HHC and rear division operations while the 3 forward support platoons support the divisions three brigades. The deployed MP platoons are provided food service by the supported unit. Actual platoon deployments can vary from day to day. For this analysis, MP elements are assumed deployed and provided food service supported as follows

HHC, Inf(M)) Brigade - each HHC supports 1 MP Fwd Spt Pltn (21)

HHC, Arm Brigade - supports 1 MP Fwd Spt Pltn (21)

HHC/MMC, Spt Bn, Hvy Div - 1 MP GS Pltn (21)

HHD,MSB - supports 1 MP GS Pltn (21)

Rear CP, HHC, Inf Div (M) - supports the MP Div Ops Sec (6)

Main CP, HHC, Inf Div (M) - supports the MP Co Hqtrs Sec, Combat Medic Sec, and 1 MP GS Pltn (49)

**Table A-2: Field Feeding Notes and Assumptions for TOE 87000A200
Mechanized Infantry Division Units (4-M1, 5-BFVS, 2 AHB) (Cont'd)**

TOE	Field Feeding Support Plan and Assumptions
11065L400 Div Sig Bn (6 Node) (MSE)	<p>The Signal Bn has 5 subordinate companies to include 1 HHC (11066L400), 3 Area Signal Companies (11067L100), and 1 Signal Support Company (11068L400). The HHC has 17 cooks, 3 MKTs and 5 KCLs and provides field feeding support to all subordinate units of the battalion, less any deployed elements. Per CASCOM, due to unit dispersion, the battalion would typically operate the 3 MKTs as separate kitchens in 3 locations. How subordinate battalion units and elements are provided field feeding support will vary and depends on several factors. With UGR-A rations, the assumed field feeding support plan (excluding deployed elements) was: 1 MKT supports the HHC and 1 Area Signal Company, 1 MKT supports 1 Area Support Companies, and 1 MKT supports Signal Support Company and 1 Area Support Company. With UGR-H/S rations, depending on the tactical situation, each company could be supported as above for UGR-A rations, or each Company could prepare their own rations at company level with a MKT or a KCL.</p>
11066L400 HHC Div Sig Bn (MSE)	<p>Also see comments for 11065L400. For field feeding, the Division Signal Office Section and the Division COMSEC Office Section are assumed attached to Main CP, HHC, Inf (M) Div. With UGR-A rations, it is assumed the HHC operates 1 MKT to support itself, 1 Area Signal Company (less 1 Nodal Pltn), and the Headquarters Sec, Signal Support Company.. With UGR-H/S rations, depending on the tactical environment, the Area Support Company could be supported as above or use a KCL and support itself.</p>
11067L100 Area Signal Co (MSE)	<p>Also see comments for 11065L400 above. The battalion has 3 Area Signal Co (MSE). Each Area Signal Company has 2 Nodal platoons. For the analysis, 1 Nodal Platoon from each Company is assumed deployed and attached to a supported HHC, Inf(M) Bde or HHC, Arm Bde for field feeding support. For field feeding and UGR-A rations, it is assumed the HHC, Sig Bn kitchen supports 1 Area Signal Company, the Signal Support Company kitchen supports 1 Area Support Company, and that 1 Area Support Company operates its own MKT. With H/S rations, depending on the tactical situation, each Area Signal Company could be supported as above, or each could prepare their own rations at Company level using either a MKT or a KCL.</p>

**Table A-2: Field Feeding Notes and Assumptions for TOE 87000A200
Mechanized Infantry Division Units (4-M1, 5-BFVS, 2 AHB) (Cont'd)**

TOE	Field Feeding Support Plan and Assumptions
	11068L400 Signal Support Company (MSE)
	Also see comments for 11065L400 above. The Company Hqtrs (str 23) is
	assumed to collocate and be provided feeding support by the HHC, Div Sig Bn field
	kitchen. All other Company elements are assumed to be supported by a separate
	company level MKT operation for both UGR-A or UGR-H/S rations.
	44175A000 ADA Bn, Hvy Div
	The Battalion has 5 batteries to include 1 HHB, 3 ADA Btry (SFV/MPADS), and 1
	ADA Btry (Avenger). The HHB has 18 cooks, 3 MKTs, 6 Field Ranges, and no KCLs
	and provides field feeding support to the entire battalion. Depending on the
	deployment and operational environment, the MKTs may set-up/operate as one
	consolidated kitchen or set-up/operate in 2-3 different locations to support battalion
	elements. Per CASCOM, the MKTs will more typically set-up/operate as 2-3 separate
	kitchens in different locations. Based on battalion food service staffing levels, for this
	analysis and UGR-A rations, it was assumed that 2 MKTs locate at the HHB to
	support the HHB and 2 of the ADA (SFV/MPADS) Btry's, and the third MKT is set up
	in a another location to support one ADA (SFV/MPADS) Btry and the ADA Btry
	(Avnger). With UGR-H/S rations, each Battery can be supported as for UGR-A
	rations, or each Btry can prepare their own UGR-H/S meals at Btry level by using
	either a MKT or 2-3 field ranges.
	44176A000 HHB, ADA Bn
	See 4175A000 above for the HHB field feeding support plan with UGR-A and with
	UGR-H/S rations.
	44177A000 ADA Btry,(SFV/MPADS)
	See 4175A000 above for the field feeding support plan for each ADA Btry
	(SFV/MPADS) for UGR-A and for UGR-H/S rations.
	44178A000 ADA Btry (Avenger)
	See 44175A000 above for the ADA Btry (Avenger) field feeding support plan with
	UGR-A and with UGR-H/S rations.

**Table A-2: Field Feeding Notes and Assumptions for TOE 87000A200
Mechanized Infantry Division Units (4-M1, 5-BFVS, 2 AHB) (Cont'd)**

TOE	Field Feeding Support Plan and Assumptions
05332L000 HHD, Engineer Brigade	<p>The HHD has 1 cook but no food service equipment. For field feeding, the HHD is assumed to be supported by the Main CP, HHC, Division.</p>
05335L000 Eng Bn, Hvy Div	<p>The Eng Bn consists of 1 HHC and 3 Eng Co. The HHC has all battalion field feeding assets to include 2 MKTs, no KCLs, 4 ranges, and 12 cooks. Authorized food service staffing levels are based on one consolidated battalion level kitchen.</p>
05336L000 HHC, Eng Bn	<p>See 05335L000. The 2 MKTs are assumed to operate at the HHC as one consolidated kitchen to support all battalion elements with UGR-H/S or UGR-A rations. With no KCLs and only 4 ranges, it was assumed the ranges are used to provide a unit level hot beverage capability and not a unit level UGR-H/S capability.</p>
05337L000 Eng Co, Eng Bn, Hvy Div	<p>See 05335L000 and 05336L000. With both UGR-A and UGR-H/S rations, the battalions 3 Eng Co are provided field feeding support from one consolidated battalion field kitchen operated at the HHC.</p>
34395A000 MI Bn (CEWI), Hvy Div	<p>The MI Bn consists of 1 HH&O Co, 3 MI Co (Direct Support), and 1 MI Co (General Support).</p>
34396L000 HH&O Co, MI Bn	<p>See 34396L000 above. The HH&O Co is authorized 1 MKT, 2 KCLs, 2 ranges, and 11 cooks. For UGR-A rations, it is assumed the HH&O operates the MKT to support the HH&O Co and MI Co (GS) elements not forward deployed. From the HH&O Co, 1 SATCOM Team (str 3) and 1 Intel Process Tm (str 6) are assumed forward deployed/attached to each HHC, Inf(M) Bde and each HHC, Arm Bde. All other HH&O elements are provided field feeding support by the HH&O kitchen. With UGR-H/S rations, each unit can be supported as for UGR-A rations, or each unit could heat/prepare their own rations utilizing either a MKT or a KCL.</p>

**Table A-2: Field Feeding Notes and Assumptions for TOE 87000A200
Mechanized Infantry Division Units (4-M1, 5-BFVS, 2 AHB) (Cont'd)**

TOE	Field Feeding Support Plan and Assumptions
34397A000 MI Co (DS), MI Bn	Depending on the deployment, the three MI Co (DS) could be provided food service support by the HH&Co, MI Bn. or by a supported HHC, Inf(M) Bde and HHC Arm Bde. For this analysis, for both UGR-A and UGR-H/S rations, the MI CO's (DS) are assumed forward deployed and provided field feeding by the HHC of the supported Bde.
34398A000 MI Co (GS), MI Bn	See 34395L000 and 34396L000 above. From the MI Co (GS), 1 Electronic Warfare Team (str 8) is assumed to forward deployed and attach to each HHC, Inf(M) Bde and HHC, Arm Bde for food service support. With UGR-A rations, all other MI Co (GS) elements are assumed to be supported by the HH&O Co field kitchen. With UGR-H/S rations, the MI CO (GS) could also be supported by the HH&O kitchen, or the MI Co (GS) could prepare their own UGR-H/S rations with a KCL.
03157L200 Chemical Company	The Chemical Company supports the entire division. The Company has no organic food service capability and is primarily dependent on the Division Hq & Hq Co for food service support. The company has several Smoke, Recon, and Decon Squads which are deployed to support divisional elements on as required basis. When deployed, food service is provided by the supported unit. Number of squads deployed and units supported will vary from day to day. For this analysis, Chemical Company elements are assumed deployed and provided food service support by the following units. HHC, Inf(M) Brigade - each HHC supports 1 Recon Team, 1 Smoke Team, and 2 Decon Sqds. HHC, Armor Brigade - supports 1 Recon Team, 1 Smoke Team, and 2 Decon Sqds. Rear Cmd Post, HHC, Inf Div (M) - supports 1 Recon Team, 1 Smoke Team, and 2 Decon Sqds. Main Cmd Post, HHC, Inf Div (M) - supports remainder of Chemical Company

**Table A-2: Field Feeding Notes and Assumptions for TOE 87000A200
Mechanized Infantry Division Units (4-M1, 5-BFVS, 2 AHB) (Cont'd)**

TOE	Field Feeding Support Plan and Assumptions
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87042L200 HHC, Armor Brigade

The HHC has 1 MKT, 1 KCL, and 6 cooks and provides UGR-A and UGR-H/S field feeding support for all HHC personnel and all attached/supporting elements from the MI Battalion, Signal Battalion, Chemical Company, and MP Company.

87042L100 HHC, Inf (Mech) Brigade

See prior comments for 87042L200 HHC, Armor Brigade.

17375L000 Tank Bn, Hvy Div

Each Tank Bn consists of 1 HHC and 4 Tank Companies. While Tank Bn's and Inf(M) Bn's will often cross attach line companies, for this analysis ration break requirements are based on each battalions strength without Tank Bn and Inf Bn (M) cross attachments. Tank Bn attachments for feeding support include 1 Mvr Bn FSE and 4 Tank Co FIST Tms from the HHB, FA Bn.

17376L000 HHC, Tank Bn

See 17375L000. All battalion field feeding assets to include 3 MKTs, 4 KCLs, and 20 cooks are assigned to the HHC. For UGR-A rations, it is assumed the 3 MKTs operate as one consolidated field kitchen at the HHC to support the battalion and any attachments. With UGR-H/S rations, all battalion elements can be supported by one consolidated battalion kitchen at the HHC, or each Company can heat/prepare their own rations at Company level using either a MKT or KCL. When each Company prepares their own H/S rations, the Mvr Bn FSE is supported by the HHC, Tank Bn kitchen; and 1 Tank Co FIST Tm is attached/supported by each Tank Co kitchen.

17377L000 Tank Co, Tank Bn

See 17375L000. With UGR-A rations, field feeding support is provided by a consolidated battalion level kitchen operated at the HHC, Tank Bn. With UGR-H/S rations, depending on the operational environment, rations can be provided the same way UGR-A rations are, or each Company could prepare their own H/S rations using a MKT or a KCL.

**Table A-2: Field Feeding Notes and Assumptions for TOE 87000A200
Mechanized Infantry Division Units (4-M1, 5-BFVS, 2 AHB) (Cont'd)**

TOE	Field Feeding Support Plan and Assumptions
17245L200 Infantry (M) Bn, Hvy Div	<p>Each Inf (M) Bn (BFV) consists of 1 HHC and 4 Rifle Companies (BFV). While Inf (M) Bns' and Tank Bns' will often cross attach line companies, for this analysis ration break requirements are based on each battalions strength without Infantry Bn and Tank Bn cross attachments. Inf (M) Bn attachments for feeding support include: 1 Mvr Bn FSE and 4 MI Co FIST Tms from the HHB, FA Bn.</p>
17246L200 HHC, Inf (M) Bn (BFV)	<p>See 07245L000. All battalion field feeding assets to include 3 MKTs, 4 KCLs, and 18 cooks are assigned to the HHC. For UGR-A rations, it is assumed the 3 MKTs operate as one consolidated field kitchen at the HHC to support the battalion and any attachments. With UGR-H/S rations, all battalion elements can be supported by one consolidated battalion kitchen at the HHC, or each Company can heat/prepare their own rations at Company level using a MKT or KCL. When each Company prepares their own H/S rations, the Mvr Bn FSE is supported by the HHC, Tank Bn kitchen; and 1 MI Co FIST Tm is attached/supported by each Rifle Co kitchen.</p>
07247L200 Rifle Co, Inf Bn (BFV)	<p>See 07245L200. With UGR-A rations field feeding support is provided by a consolidated battalion level kitchen operated at the HHC, Inf (M) Bn. With UGR-H/S rations, depending on the operational environment, rations can be provided the same way as UGR-A rations are, or each Company could prepare their own H/S rations using a MKT or a KCL.</p>
06302L000 HHB, Division Arty, Hvy Div	<p>The HHB has 2 MKTs, 1 KCL, and 11 cooks. While the HHB has 2 MKTs, it is assumed to operate them as a single kitchen to support non deployed HHB elements. The HHB's total authorized strength is 181 of which 44 are assumed attached out for food service support. For this analysis, HHB elements assumed deployed and provided food service support by other units include:</p> <ul style="list-style-type: none"> 1 Div FSE (str 20) - supported by Main CP, HHC, Inf (M) Div 1 Cav Sqd FSE (str 4) - supported by HHT, Div Cav Sqdrn 3 Cav Trp FIST (str 4) - supported 1 per Cav Trp, Cav Sqdrn 1 Avn Bde FSE (str 4) - supported by HHC, Div Avn Bde 2 Attk Helo Bn FSE (str 2) - supported 1 per HHC, Avn Attk Bn

**Table A-2: Field Feeding Notes and Assumptions for TOE 87000A200
Mechanized Infantry Division Units (4-M1, 5-BFVS, 2 AHB) (Cont'd)**

TOE	Field Feeding Support Plan and Assumptions
06365A400/500 FA Bn 155SP Split Ops HD	
<p>These FA Bn consists of 1 HHB (06366A400 or 06366A500), 3 FA Btry 155SP (06367A200), and 1 Svc Btry 155 SP (06369A200). The difference between the 2 HHB's are the mix/number of Tank FIST and MI FIST Teams per HHB. For each battalion, all field feeding assets to include 5 MKTs, 2 KCLs, and 21 cooks are assigned to the Svc Btry. With 5 Btry's and 5 MKTs per battalion, ration break requirements are based on the assumption that each Btry operates it's own independent kitchen with both UGR-A or UGR-H/S rations.</p>	
06366A400 HHB FA Bn 155SP Plt Ops HD	
<p>See 06365A400 above and 06365A500 below. The HHB is assumed to operate it's own MKT battery level kitchen to support elements not deployed out and attached to other units. Total HHB strength is 211 of which 97 are attached to other units for feeding support. Elements attached out include:</p> <ul style="list-style-type: none"> 1 Mvr Bde FSE (str 7) - attached to HHC Inf(M) Bde or HHC Arm Bde 3 Mvr Bn FSE (str 6) - 1 per HHC, Arm Bn or HHC, Inf(M) Bn 8 Tank FIST (str 4) - 1 per Tank Co, Tank Bn 4 MI FIST (str 10) - 1 per Inf (M) Co, Inf(M) Bn. <p>Together with TOE 06366A500 elements, 1 Mvr Bde FSE is attached to each HHC, Inf (M) or Arm Bde; 1 Mvr Bn FSE is attached to each HHC, Arm Bn or Inf (M) Bn; 1 Tank FIST Tm is attached to each Tank Co; and 1 MI FIST Tm is attached to Inf (M) Co.</p>	
06366A500 HHB FA Bn 155SP Plt Ops HD	
<p>Difference between this HHB and 06366A400 is the number of Tank and MI FIST Teams. This HHB has 4 Tank FIST Tms and 8 MI FIST Tms, while the other HHB has 8 Tank FIST and 4 MI FIST Tms.</p>	
06367A200 FA Btry 155SP (1x6) Plt Op	
<p>See comments for 06365A4090/500. Since the battalion has 5 MKTs, for this analysis it was assumed that each FA Btry 155SP operates it's own MKT at battery level for both UGR-A and UGR-H/S rations.</p>	
06369A200 Svc Btry, 155 SP Plt Ops	
<p>See comments for 06365A400/500. The Svc Btry is assumed to operates it's own battery level MKY for both UGR-A and UGR-H/S rations.</p>	

**Table A-2: Field Feeding Notes and Assumptions for TOE 87000A200
Mechanized Infantry Division Units (4-M1, 5-BFVS, 2 AHB) (Cont'd)**

TOE **Field Feeding Support Plan and Assumptions**

06395A000 FA Bn MLRS

The MLRS Bn includes 1 HHS (06396A000), 2 MLRS Btry (06397A000), and 1 TAB (06399A000). Each battery has its own cooks and MKT and is assumed to operate its own battery level field kitchens for both UGR-A and UGR-H/S rations. The Bn also provides feeding support to the MLRS Support Tm, Elec Mnt Co, MSB (TOE 09018L000) (str 26). Of these personnel, 6 are assumed attached to each FA Btry and the remaining 14 are attached to the HHS for feeding support

06396A000 HHS FA Bn MLRS

See 06395A000. The HHS has 1 MKT and its own cooks and is assumed to operate its own Btry level field kitchen for both UGR-A and UGR-H/S rations. The HHS also provides feeding support to the 14 MLRS Support Tm personnel from TOE 09018A000.

06397A000 FA Btry FA Bn MLRS Hvy Div

See 06395A000. Each Btry has 1 MKT and its own cooks and is assumed to operate its own Btry level field kitchen for both UGR-A and UGR-H/S rations. In addition, each Btry provides feeding support to 6 MLRS Suppot Tm personnel from TOE 09018A000 Elec Mnt Co, MSB.

06399A000 TAB FA Bn MLRS Hvy Div

See 06395A000. The TAB has 1 MKT and its own cooks and is assumed to operate its own Btry level field kitchen for both UGR-A and UGR-H/S rations.

01302A000 HHC, Div Avn Bde

This Avn Bde HHC is a split based unit. The Company has 1 MKT and 5 cooks and operates its own Company level kitchen for both UGR-A and UGR-H/S rations. For this analysis, the unit also provides field feeding support to the Avn Bde FSE, HHB, DIVARTY (str 4) from TOE 06302L000.

01305A200 GS Avn Bn (UH-60)

The Bn consists of 1 HHC (01306A200), 2 Spt Avn Co (TOE 01307A200), 1 Command Avn Co (TOE 01308A200), and 1 AVUM (AH-1) (TOE 01388A100) and is a split base unit. The battalion operates from the division rear area and will employ aircraft throughout the division area of operations. Normally all of the subordinate companies set-up with or in proximity of the HHC.

**Table A-2: Field Feeding Notes and Assumptions for TOE 87000A200
Mechanized Infantry Division Units (4-M1, 5-BFVS, 2 AHB) (Cont'd)**

TOE	Field Feeding Support Plan and Assumptions
01306A200 HHC, GS Avn Bn	<p>See TOE 01305A200. The HHC normally organizes into a TOC, a rear CP, and an alternate CP. The HHC has all the battalion food service assets to include 1 Container Kitchen, 4 KCLs, and 10 cooks. For UGR-A rations, the 1 authorized Container Kitchen is operated at the HHC to support the entire battalion. For UGR-H/S rations, the battalion has the equipment to prepare H/S rations at Company level. All battalion elements typically set-up and operate near the HHC. For this analysis it was assumed that the Spt Avn Co's and Cmd Avn Co are also provided UGR-H/S rations by the HHC kitchen, while the AVUM Co may be provided UGR-H/S rations by the HHC or it may prepare its own H/S rations utilizing a KCL.</p>
01307A200 Spt Avn Co, GS Avn Bn	<p>Also see TOE 01306A200. The battalions 2 Spt Avn Co's set-up with or near the HHC, GS Avn Bn. For this analysis, it was assumed the Spt Avn Co's UGR-A or UGR-H/S rations are provided by the HHC field kitchen.</p>
01308A200 Cmd Avn Co, GS Avn Bn	<p>Also see TOE 01306A200. Cmd Avn Co set-ups with or near the HHC, Avn Bn. For this analysis, it was assumed both UGR-A and UGR-H/S rations are provided by the HHC field kitchen.</p>
01388A100 AVUM(AH-1) Co, GS Avn	<p>Also see TOE 01306A200. The AVUM CO provides aviation unit maintenance for the GS Avn Bn. The Co will normally set-up/operate near the supported Avn Co's. On occasion, the Company will provide limited aviation maintenance support in forward areas. For this analysis, UGR-A rations are provided by the HHC container kitchen and UGR-H/S rations are either provided by the HHC kitchen of the AVUM Co may prepare their own rations utilizing a KCL</p>
01386A200 Attack Battalion (AH-64)	<p>The Bn consists of 1 HHC (TOE 01386A100), 3 Attack Co (TOE 01387A200), and 1 AVUM (TOE 01389A200).</p>

**Table A-2: Field Feeding Notes and Assumptions for TOE 87000A200
Mechanized Infantry Division Units (4-M1, 5-BFVS, 2 AHB) (Cont'd)**

TOE	Field Feeding Support Plan and Assumptions
01386A100 HHC, Attack Bn (AH-64)	<p>See TOE 01386A100. The HHC normally organizes into a TOC, a rear CP, and an alternate CP. The HHC has all battalion food service assets to include: 1 MKT, 2 KCLs, and 9 cooks and provides food service support for all units organic to or attached to the battalion. For UGR-A rations, the single MKT is operated at the HHC to support all battalion elements. For UGR-H/S, the 3 Attk Companies are assumed supported by the HHC kitchen while the AVUM Co may be supported by the HHC kitchen or may set-up and prepare its own H/S meals utilizing a KCL.</p>
01387A200 Attack Co, Attack Bn (AH-64)	<p>See TOE 01386A200. The Attack Co's have limited/no capability for independent operations away from its parent battalion. For this analysis, both UGR-A and UGR-H/S rations are assumed to be provided from the HHC, Attack Bn field kitchen.</p>
01389A200 Avn Unit Mnt Co (AH-64), Attk Bn (AH-64)	<p>See TOE 01386A200. The AVUM normally set-ups up in the DSA. For this analysis, UGR-A rations are provided by the HHC, Attack Bn kitchen while UGR-H/S rations may be provided the same way or the AVUM may set-up a KCL and prepare their own H/S rations.</p>
17285L200 Div Cav Sqdn	<p>The Cav Sqdrn consists of 1 HHT (TOE 17286L000), 3 Cav Trp (TOE 17287L000), 2 Air Recon Trp (TOE 01367A200), and 1 Avn Svc Trp (TOE 01369A200).</p>
17286L000 HHT, Div Cav Sqdrn	<p>Part of Div Cav Sqdrn (TOE 11172285L200). The HHT operates in the division forward area. The HHT has all Sqdrn food service assets to include 3 MKTs, 5 KCLs, and 22 cooks and provides food service support to all Sqdrn units. With UGR-A rations, the Sqdrn could set-up/operate the 3 MKTs as one consolidated kitchen at the HHT or set them up in 2 or 3 separate locations. With UGR-A rations, 2 MKTs are assumed locate at the HHT to support the HHT and the 3 Cav Trp, and that one MKT locates with the Avn Svc Trp and also supports the 2 Air Recon Trp. With UGR-H/S rations, the Cav Trps may be supported from the HHT kitchen or each Cav Trp may prepare their own H/S rations utilizing a KCL.</p>

**Table A-2: Field Feeding Notes and Assumptions for TOE 87000A200
Mechanized Infantry Division Units (4-M1, 5-BFVS, 2 AHB) (Cont'd)**

TOE	Field Feeding Support Plan and Assumptions
17287L000 Cav Trp, Cav Sqdn	Part of the Div Cav Sqdrn (TOE 17285L200). The Cav Trp operates in the division forward area. A Land Cbt Tm (str 4) from the Elec Mnt Company, MSB is attached to each Cav Trp. For UGR-A rations, it is assumed the 3 Cav Trps are supported from 2 MKTs operated at the HHT. For UGR-H/S rations, the 3 Cav Trps may continue to be supported by the HHT kitchen or each Cav Trp could prepare their own hot meals utilizing a KCL.
01367A200 Air Recon Trp (OH-58D)	Part of Div Cav Sqdrn (TOE 17285L200). The Air Recon Trp is assumed to set-up near the Avn Svc Trp (TOE 01369A200) in the DSA which provides aviation unit maintenance support. Both UGR-A and UGR-H/S ration support is assumed to provided from the Avn Svc Trp MKT kitchen.
01369A200 Avn Svc Trp (OH-58D)	Part of Div Cav Sqdrn (TOE 17285L200). The Avn Svc Trp normally operates in the Division support area (DSA) and provides aviation unit maintenance support to the Air Recon Trp, Cav Trp. For this analysis, it was assumed that one MKT locates with the Avn Svc Trp to support the Avn Svc Trp and the Air Recon Trp with UGR-A or UGR-H/S rations.
63002L000 HHC/MMC, Spt Cmd Hvy Div	The HHC/MMC has 1 MKT and 7 cooks and provides food service support to itself and 1 attached MP GS Plt.
63885A200 Div Avn Spt Bn (DASB), Hvy Div	The Div Avn Spt Bn consists of: 1 HSC (TOE 63886A000), 1 Ground Mnt Co (TOE 43888A000), 1 AMC (TOE 01933A200), 1 AMC Repair Tm (TOE 01533AA00), and 1 EEFT Aug Team (TOE 01533ACOO). The DASB and it's organic companies are employed in the DSA in close proximity to the division aviation brigade it supports.

**Table A-2: Field Feeding Notes and Assumptions for TOE 87000A200
Mechanized Infantry Division Units (4-M1, 5-BFVS, 2 AHB) (Cont'd)**

TOE	Field Feeding Support Plan and Assumptions
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63886A000 HSC, Div Avn Spt Bn (DASB)

The HSC has 1 Container kitchen, 1 KCL, and 15 cooks and operates 1 consolidated field kitchen and provides food service support to all units organic to the battalion. The HSC will normally locate within the DSA near the tactical assembly area(s) of the aviation brigade, and establish distribution points in both the division rear and in the maneuver brigade area. While elements of the HSC may forward deploy in support of FARP operations, for this analysis all personnel are assumed to be provided food service support by the HSC kitchen.

43888A000 Ground Mnt Co, (DASB)

Part of the Div Avn Spt Bn (TOE 63885A200). The unit provides DS maintenance support to the Avn Brigade to include the Cav Sqdrn. The Company will normally collocate with the HSC in the DSA. While elements may forward deploy, field feeding support for all unit personnel is assumed to be provided by the HSC, Spt Bn (Avn) (TOE 63886A000) field kitchen.

01933A200 AMC, DASB (AH64/OH58D)

Part of the Div Avn Spt Bn (TOE 63885A200). Field feeding support provided by HSC, Spt Bn (Avn) (TOE 63886A000).

01533AA00 AMC Repair Tm (AH64/24)

Part of the Div Avn Spt Bn (TOE 63885A200). Field feeding support provided by HSC, Spt Bn (Avn) (TOE 63886A000).

01533AC00 EETF Aug Team

Part of the Div Avn Spt Bn (TOE 63885A200). Field feeding support provided by HSC, Spt Bn (Avn) (TOE 63886A000).

63005L100 Fwd Spt Bn (2x1), Hvy Div

The division has 1 Fwd Spt Bn (2x1). The battalion includes 1 HHD (TOE 63006L000, 1 QM Co (TOE 42008L000), 1 Mnt Co (TOE 43009L000), 2 Tank System Support Teams (TOE 43510LA00), 1 Inf (M) Support Team (TOE 43510LB00), and 1 Medical Company (TOE 08058L100).

**Table A-2: Field Feeding Notes and Assumptions for TOE 87000A200
Mechanized Infantry Division Units (4-M1, 5-BFVS, 2 AHB) (Cont'd)**

TOE	Field Feeding Support Plan and Assumptions
63005L300 Fwd Spt Bn (1x2), Hvy Div	<p>The division has 2 Fwd Spt Bns. This Bn is similar to the Fwd Spt Bn (2X1) above with the following differences: 1 Tank System Support Teams, 2 Inf (M) Support Teams, plus 1 Missile System Support Team.</p>
63006L000 HHD, Fwd Spt Bn, Hvy Div	<p>Organic to both the Fwd Spt Bn (2x1) (TOE 63005L100) and the Fwd Spt Bn (1x2) (TOE 63005L300). The HHD is authorized 3 MKTs, 3 KCLs, and 14 cooks and provides food service support to all subordinate units of the battalion. The HHD sets-up/operates in the BSA of the supported brigade. The Tank System Support Team and Inf (M) Support Team normally collocate with the HHD in the BSA but may forward deploy/colligate with the supported Tank Bn or Inf (M) Bn. For this analysis, these teams are assumed to setup in the BSA and be provided food service support by the HHD.</p>
42008L000 QM Supply Co, Fwd Support Bn	<p>Organic to both the Fwd Spt Bn (2x1) (TOE 63005L100) and the Fwd Spt Bn (1x2) (TOE 63005L300). The QMS Supply Company locates near the tactical assembly area in the BSA. Field feeding support is provided by the Fwd Spt Bn's HHD (63006L000) field kitchen.</p>
43009L000 Mnt Co, Fwd Spt Bn	<p>Organic to both the Fwd Spt Bn (2x1) (TOE 63005L100) and the Fwd Spt Bn (1x2) (TOE 63005L300). The Mnt Company setups in the BSA and field feeding support is provided by the Fwd Spt Bn's HHD (63006L000).</p>
43510LA00 Tank System Support Team	<p>Organic to both the Fwd Spt Bn (2x1) (TOE 63005L100) and the Fwd Spt Bn (1x2) (TOE 63005L300). The team is normally attached to the Mnt Co (43009L000) in the BSA but may forward deploy/colligate with the supported Tank Bn. If forward deployed, food service support would be provided by the supported battalion. For this analysis, Team assumed deployed/located in BSA and provided food service support by the Fwd Spt Bn's HHD (63006L000).</p>

**Table A-2: Field Feeding Notes and Assumptions for TOE 87000A200
Mechanized Infantry Division Units (4-M1, 5-BFVS, 2 AHB) (Cont'd)**

TOE	Field Feeding Support Plan and Assumptions
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43510LB00 Inf (M) System Support Team
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Organic to both the Fwd Spt Bn (2x1) (TOE 63005L100) and the Fwd Spt Bn (1x2) (TOE 63005L300). The team is normally attached to the Mnt Co (43009L000) in the BSA but may forward deploy/collocate with the supported Inf (M) Bn. If forward deployed, food service support would be provided by the supported battalion. For this analysis, the team assumed delayed/located in BSA and provided food service support by the Fwd Spt Bn's HHD (63006L000).

08058L100 Med Co, FSB, Hvy Div

Organic to both the Fwd Spt Bn (2x1) (TOE 63005L100) and the Fwd Spt Bn (1x2) (TOE 63005L300). The Medical Co set-up and operates in the BSA of the supported Brigade. Food service support is provided by the HHD, Fwd Spt Bn. Elements may operate remotely from the main unit, for example Treatment Squads providing direct support to units in combat, or ambulance squads to transport patients to/from the Medical Companies treatment facilities. When remote, these elements would be provided food service support by the supported unit. For this analysis, the HHD, Fwd Spt Bn is assumed to provide food service support to all Medical Company elements and in addition 40 patients.

43510LC00 Missile Sys Spt Tm, FSB, Hvy Div

Organic only to Fwd Spt Bn (1x2) (TOE 63005L300). The team is normally attached to the Mnt Co (43009L000) in the BSA but may forward deploy/collocate with the supported Inf (M) Bn. If forward deployed, food service support would be provided by the supported battalion. If forward deployed, food service support would be provided by the supported battalion. For this analysis, the Team assumed delayed/located in BSA and provided food service support by the Fwd Spt Bn's HHD (63006L000).

63135A000 Main Spt Bn (MSB), Hvy Div

The MSB has 1 HHD (TOE 63136L000), 1 Supply Co (TOE 42007L000), 1 TMT Co (TOE 55188L000), 1 Hvy Mnt Co (TOE 43008L000), 1 Elec Mnt Co (TOE 09018A000), and 1 Medical Co (08057L000).

**Table A-2: Field Feeding Notes and Assumptions for TOE 87000A200
Mechanized Infantry Division Units (4-M1, 5-BFVS, 2 AHB) (Cont'd)**

TOE	Field Feeding Support Plan and Assumptions
63136L000 HHD, MSB, Hvy Div	<p>The HHD has 2 Container Kitchens, 3 KCLs, and 28 cooks and provides food service support to all units of the battalion, less any forward deployed elements. In addition to battalion personnel, the food service section is designed to support up to 1151 personnel to include any attached elements and replacement personnel during the 48 hour hold period. The HHD and other MSB units will normally set-up and operate in the DSA with select elements forward deploying and providing direct unit support in BSAs. For this analysis, the 2 Container Kitchens are assumed to be collocated and function as a consolidated battalion level kitchen. All HHD elements are assumed to be supported by the HHD consolidated kitchen.</p>
42007L000 Supply Co, MSB, Hvy Div	<p>The Supply Company locates/operates in the DSA. The HHD, MSB is assumed to provide food service support to all Company elements except for 3 Water Supply Teams (4 each) which are assumed forward deployed 1 per BSA and provided food service support by the supported HHC, FSB. Also while Petroleum Distribution Section elements may be remote from the DSA delivering fuel to the FSB supply companies or division rear companies, for this analysis they were assumed to be provided food service support by the HHD, MSB.</p>
55188L000 TMT Co, MSB, Hvy Div	<p>The TMT Company setups/operates from the DSA. The TMT's mission is to provide transportation support to the division and therefore is employed throughout the divisional area. Truck squads can be deployed anywhere in the divisional area conducting assigned missions. At remote locations, truck squads would be provided food service support by the same field kitchen supporting other area units. As assigned missions vary from day to day, the unit providing a truck squad food service support will also vary from day to day. Therefore, for this analysis, food service support for all Company elements was assumed to be provided by the HHD, MSB.</p>

**Table A-2: Field Feeding Notes and Assumptions for TOE 87000A200
Mechanized Infantry Division Units (4-M1, 5-BFVS, 2 AHB) (Cont'd)**

TOE	Field Feeding Support Plan and Assumptions
43008A000 Hvy Mnt Co, MSB, Hvy Div	<p>The Hvy Mnt Co normally operates in the DSA and is dependent on the HHD, MSB for food service support. The unit provides DS maintenance support to units operating in the division area and backup support to the FS Battalions operating in the BSAs. As necessary, maintenance support teams (MSTs) can be formed from the maintenance sections to provide support forward at the BSAs. For this analysis, all unit elements are assumed to operate in the DSA and provided food service support by the HHB, MSB.</p>
09018A000 Electronics Maintenance Co, MSB	<p>This unit normally operates in the DSA and except for forward deployed elements is dependent on the HHD, MSB for food service support. The unit provides DS electronic maintenance support and CI IX support to divisional units except Signal Bn, MI Bn, and aviation units. For this analysis, the following units provide food service support to one or more company elements:</p> <ul style="list-style-type: none">Cav Troop - 1 Mnt Spt Tm from sec 5 (4 each)FA Btry MLRS - 3 MLRS Spt Tms of 2 (6 each)HHS FA Bn MLRS - rest of Sec 6 MLRS Support Team (14)HHB, MSB - all other Company elements
08057L000 Medical Co, MSB, Hvy Div	<p>The Medical Co, MSB operates in the DSA. Unit treatment squads and ambulance squads may operate away from the DSA providing direct treatment or to transport patients. When remote, these elements would be provided food service by the supported unit. For this analysis, the HHD, MSB is assumed to provide food service support to all Medical Company elements and in addition 40 patients.</p>
12113L000 Div & Army Band (DS)	<p>In addition to the band mission, the unit has an MP mission of CP security and perimeter security for POW central collection and prisoner holding areas. For this analysis, the band is assumed to collocate with and provided food service support by the Main Command Post, HHC, Inf(M) Div.</p>

Table A-3. Mechanized Infantry Division (TOE 870000A200) Module Requirements Based on UGR-A Kitchen Locations

TOE	Unit Kitchen	UGRA Kitchen Sites			Authorized Modules					
		Feeding Str/ Kitchen	No. Kitch.	Total Feeding Strength	18	36	50	54	72	
87004A200 Main Cmd Post, HHC, Inf Div (M)	437	1	437	25	13	9	9	9	7	
87004A200 Rear Cmd Post, HHC, Inf Div (M)	154	1	154	9	5	4	3	3	3	
11066L400 HHC, Signal Bn (6 Node) MSE	212	1	212	12	6	5	4	3	3	
11067L100 Area Signal Co, Signal Bn	79	1	79	5	3	2	2	2	2	
11068L400 Signal Support Co, Signal Bn	180	1	180	10	5	4	4	3	3	
44176A000 HHC,ADA Bn	477	1	477	27	14	10	9	7	7	
44177A000 ADA Btry (SFV/MPADS)	0	0	0	0	0	0	0	0	0	0
44178A000 ADA Btry (Avenger)	136	1	136	8	4	3	3	3	2	
05336L000 HHC, Eng Bn, Hvy Div	446	3	1,338	75	39	27	27	27	21	
34396L000 HH&O Co, MI Bn	199	1	199	12	6	4	4	4	3	
34398A000 MI Co (GS), MI Bn	0	0	0	0	0	0	0	0	0	
87042L200 HHC, Armor Brigade	248	1	248	14	7	5	5	5	4	
87042L100 HHC, Inf (Mech) Brigade	247	2	494	28	14	10	10	10	8	
17376L000 HHC, Tank Bn	627	4	2,508	140	72	52	48	48	36	
17377L000 Tank Co, Tank Bn	0	0	0	0	0	0	0	0	0	
07246L200 HHC, Inf Bn (BFV)	827	5	4,135	230	115	85	80	80	60	
07247L200 Rifle Co, Inf Bn (BFV)	0	0	0	0	0	0	0	0	0	
06302L000 HHC, Div arty	137	1	137	8	4	3	3	3	2	
06366A400 HHB FA Bn 155SP Plt Ops HD [BN 06365A400]	114	1	114	7	4	3	3	3	2	
06367A200 FA Btry 155SP (1x6) Plt Op [BN 06365A400]	93	3	279	18	9	6	6	6	6	
06369A200 Svc Btry, 155 SP Plt Ops HD [Bn 06365A400]	132	1	132	8	4	3	3	3	2	
06366A500 HHB FA Bn 155SP Plt Ops HD [BN 06365A500]	116	2	232	14	8	6	6	6	4	
06367A200 FA Btry 155SP (1x6) Plt Op [BN 06365A500]	93	6	558	36	18	12	12	12	12	
06369A200 Svc Btry, 155 SP Plt Ops HD [Bn 06365A500]	132	2	264	16	8	6	6	6	4	
06396A000 HHS FA Bn MLRS	113	1	113	7	4	3	3	3	2	
06397A000 FA Btry, FA Bn MLRS	120	2	240	14	8	6	6	6	4	
06399A000 TAB FA Bn MLRS	76	1	76	5	3	2	2	2	2	
01302A000 HHC, Div Avn Bde	95	1	95	6	3	3	3	3	2	

Table A-3. Mechanized Infantry Division (TOE 870000A200) Module Requirements Based on UGR-A Kitchen Locations (Cont'd)

TOE	Unit Kitchen	UGR-A Kitchen Sites			Authorized Modules					
		Feeding Str/ Kitchen	No. Kitch.	Total Feeding Strength	18	36	50	54	72	
01306A200 HHC, GS Avn Bn	321	1	321	18	9	7	6	5		
01309A200 Avn Unit Mnt Co (AVUM), GS Avn Bn	0	0	0	0	0	0	0	0	0	
01386A200 HHC, Avn Attack Bn (AH-64)	329	2	658	38	20	14	14	10		
01389A200 Avn Unit Mnt Co (AVUM), Attack Bn (AH-64)	0	0	0	0	0	0	0	0	0	
17286L000 HHT Div Cav Sqdn	650	1	650	37	19	13	13	10		
17287L000 Cav Trp, Cav Sqdn	0	0	0	0	0	0	0	0	0	
01369A200 Avn Svc Trp (OH-58D)	127	1	127	8	4	3	3	2		
63002L000 HHC/MMC, Spt Bn, Hvy Div	240	1	240	14	7	5	5	4		
63886A000 HSC, Spt Bn (Avn)	606	1	606	34	17	13	12	9		
63006L000 HHD, Fwd Spt Bn (2x1), Hvy Div [BN 63005L100]	490	1	490	28	14	10	10	7		
63006L000 HHD, Fwd Spt Bn (1x2), Hvy Div [BN 63005L300]	485	2	970	54	28	20	18	14		
63136L000 HHD, MSB, Hvy Div	945	1	945	53	27	19	18	14		
Totals	....	55	17,844	1,018	521	376	359	276		
Total Meals	....	....	....	18,324	18,756	18,800	19,386	19,872		
% Over Issues	....	....	....	2.7%	5.1%	5.4%	8.6%	11.4%		

Table A-4. Mechanized Infantry Division (TOE 870000A200) Module Requirements Based on Maximum Use of Company Level UGR-H/S Kitchens

TOE	Unit Kitchen	Max UGR-H/S Kitchen Sites			Number Modules Auth			
		Troops/ Kitchens	No. Kitch.	Total Feeding Strength	18	36	50	72
870044A200 Main Cmd Post, HHC, Inf Div (M)		437	1	437	25	13	9	9
870044A200 Rear Cmd Post, HHC, Inf Div (M)		154	1	154	9	5	4	3
110666L400 HHC, Signal Bn (6 Node) MSE		133	1	133	8	4	3	3
110671L100 Area Signal Co, Signal Bn		79	3	237	15	9	6	6
11068L400 Signal Support Co, Signal Bn		101	1	101	6	3	3	2
44176A000 HHB, ADA Bn		156	1	156	9	5	4	3
441177A000 ADA Btry (SFV/MPADS)		107	3	321	18	9	9	6
44178A000 ADA Btry (Avenger)		136	1	136	8	4	3	3
05336L000 HHC, Eng Bn, Hvy Div		446	3	1,338	75	39	27	27
34396L000 HH&O Co, MI Bn		167	1	167	10	5	4	4
34398A000 MI Co (GS), MI Bn		32	1	32	2	1	1	1
87042L200 HHC, Armor Brigade		248	1	248	14	7	5	5
87042L100 HHC, Inf (Mech) Brigade		247	2	494	28	14	10	10
17376L000 HHC, Tank Bn		359	4	1,436	80	40	32	28
17377L000 Tank Co, Tank Bn		67	16	1,072	64	32	32	32
07246L200 HHC, Inf Bn (BFV)		355	5	1,775	100	50	40	35
07247L200 Rifle Co, Inf Bn (BFV)		118	20	2,360	140	80	60	60
06302L000 HHB, Divy Arty		137	1	137	8	4	3	3
06366A400 HHB FA Bn 155SP Plt Ops HD [BN 06365A400]		114	1	114	7	4	3	2
06367A200 FA Btry 155SP (1x6) Plt Op [BN 06365A400]		93	3	279	18	9	6	6
06369A200 Svc Btry, 155 SP Plt Ops HD [Bn 06365A400]		132	1	132	8	4	3	2
06366A500 HHB FA Bn 155SP Plt Ops HD [BN 06365A500]		116	2	232	14	8	6	4
06367A200 FA Btry 155SP (1x6) Plt Op [BN 06365A500]		93	6	558	36	18	12	12
06369A200 Svc Btry, 155 SP Plt Ops HD [Bn 06365A500]		132	2	264	16	8	6	4
06396A000 HHS FA Bn MLRS		113	1	113	7	4	3	2
06397A000 FA Btry, FA Bn MLRS		120	2	240	14	8	6	4
06399A000 TAB FA Bn MLRS		76	1	76	5	3	2	2

Table A-4. Mechanized Infantry Division (TOE 87000A200) Module Requirements Based on Maximum Use of Company Level UGR-H/S Kitchens (Cont'd)

TOE	Unit Kitchen	Max UGR-H/S Kitchen Sites			Number Modules Auth				
		Troops/ Kitchens	No. Kitch.	Feeding Strength	Total	18	36	50	54	72
01302A000 HHC, Div Avn Bde	95	1	95	6	3	2	2	2	2
01306A200 HHC, GS Avn Bn	252	1	252	14	7	6	5	5	4
01309A200 Avn Unit Mnt Co (AVUM), GS Avn Bn	69	1	69	4	2	2	2	2	1
01386A200 HHC, Avn Attack Bn (AH-64)	217	2	434	26	14	10	10	10	8
01389A200 Avn Unit Mnt Co (AVUM), Attack Bn (AH-64)	112	2	224	14	8	6	6	6	4
17286L000 HHT Div Cav Sqdn	224	1	224	13	7	5	5	5	4
17287L000 Cav Trp, Cav Sqdn	142	3	426	24	12	9	9	9	6
01369A200 Avn Svc Trp (OH-58D)	127	1	127	8	4	3	3	3	2
63002L000 HHC/MMC, Spt Bn, Hvy Div	240	1	240	14	7	5	5	5	4
63886A000 HSC, Spt Bn (Avn)	606	1	606	34	17	13	12	12	9
63006L000 HHD, Fwd Spt Bn (2x1), Hvy Div [BN 63005L100]	490	1	490	28	14	10	10	10	7
63006L000 HHD, Fwd Spt Bn (1x2), Hvy Div [BN 63005L300]	485	2	970	54	28	20	18	18	14
63136L000 HHD, MSB, Hvy Div	945	1	945	53	27	19	18	18	14
Totals	---	103	17,844	1,036	540	412	392	288	
Total Meals	---	---	---	18,648	19,440	20,600	21,168	20,736	
% Over Issues	---	---	---	4.5%	8.9%	15.4%	18.6%	16.2%	

Table A-5. Summary of Mechanized Infantry Division (TOE 87000A200) UGR-A Kitchen Location Supported Feeding Strengths

TOE	Field Kitchen Location	Feeding Strengths			Feeding Strengths			Cumulative	
		Feeding Strength/ Kitchen	No. Kitchens	Total Feeding Strength	Number Kitchens	Feeding Strength	Kitchens	Tot Str	%
06399A000 TAB FA Bn MLRS		76	1	76	1	76	1	76	2%
11067L100 Area Signal Co, Signal Bn		79	1	79	2	155	2	4%	1%
06367A200 FA Btry 155SP (1x6) Plt Op [BN 06365A400]		93	3	279	5	434	9	9%	2%
06367A200 FA Btry 155SP (1x6) Plt Op [BN 06365A500]		93	6	558	11	992	20	20%	6%
01302A000 HHC, Div Avn Bde		95	1	95	12	1,087	22	22%	6%
06396A000 HHS FA Bn MLRS		113	1	113	13	1,200	24	24%	7%
06366A400 HHB FA Bn 155SP Plt Ops HD [BN 06365A400]		114	1	114	14	1,314	25	25%	7%
06366A500 HHB FA Bn 155SP Plt Ops HD [BN 06365A500]		116	2	232	16	1,546	29	29%	9%
06397A000 FA Btry, FA Bn MLRS		120	2	240	18	1,786	33	33%	10%
01369A200 Avn Svc Trp (OH-58D)		127	1	127	19	1,913	35	35%	11%
06369A200 Svc Btry, 155 SP Plt Ops HD [Bn 06365A400]		132	1	132	20	2,045	36	36%	11%
06369A200 Svc Btry, 155 SP Plt Ops HD [Bn 06365A500]		132	2	264	22	2,309	40	40%	13%
44178A000 ADA Btry (Avenger)		136	1	136	23	2,445	42	42%	14%
06302L000 HHB, Divty Arty		137	1	137	24	2,582	44	44%	14%
87004A200 Rear Cmd Post, HHC, Inf Div (M)		154	1	154	25	2,736	45	45%	15%
11068L400 Signal Support Co, Signal Bn		180	1	180	26	2,916	47	47%	16%
34396L000 HH&O Co, MI Bn		199	1	199	27	3,115	49	49%	17%
11068L400 HHC, Signal Bn (6 Node) MSE)		212	1	212	28	3,327	51	51%	19%
63002L000 HHC/MMC, Spt Bn, Hvy Div		240	1	240	29	3,567	53	53%	20%
87042L100 HHC, Inf (Mech) Brigade		247	2	494	31	4,061	56	56%	23%
87042L200 HHC, Armor Brigade		248	1	248	32	4,309	58	58%	24%
01306A200 HHC, GS Avn Bn		321	1	321	33	4,630	60	60%	26%
01386A200 HHC, Avn Attack Bn (AH-64)		329	2	658	35	5,288	64	64%	30%
87004A200 Main Cmd Post, HHC, Inf Div (M)		437	1	437	36	5,725	65	65%	32%
05336L000 HHC, Eng Bn, Hvy Div		446	3	1,338	39	7,063	71	71%	40%
44176A000 HHB,ADA Bn		477	1	477	40	7,540	73	73%	42%
63006L000 HHD, Fwd Spt Bn (1x2), Hvy Div [BN 63005L300]		485	2	970	42	8,510	76	76%	48%
63006L000 HHD, Fwd Spt Bn (2x1), Hvy Div [BN 63005L100]		490	1	490	43	9,000	78	78%	50%
63886A000 HSC, Spt Bn (Avn)		606	1	606	44	9,606	80	80%	54%

Table A-5. Summary of Mechanized Infantry Division (TOE 87000A200) UGR-A Kitchen Location Supported Feeding Strengths (Cont'd)

TOE	Field Kitchen Location	Feeding Strengths			Cumulative Feeding Strength			Cumulative %	
		Feeding Strength/ Kitchen	No. Kitchens	Total Feeding Strength	Number Kitchens	Feeding Strength	Kitchens	Tot Str	%
17376L000 HHC, Tank Bn	627	4	2,508	48	12,114	87%	68%		
17286L000 HHT Div Cav Sqdn	650	1	650	49	12,764	89%	72%		
07246L200 HHC, Inf Bn (BFV)	827	5	4,135	54	16,899	98%	95%		
63136L000 HHD, MSB, Hvy Div	945	1	945	55	17,844	100%	100%		
Division Totals	.....	55	17,844	.....	.....	.....	.....	.....	.....

Table A-6. Summary of Mechanized Infantry Division (TOE 87000A200) Kitchen Feeding Strengths With Maximum Use of Company Level H/S Ration Preparation

TOE	Field Kitchen Location	Feeding Strength/				Cumulative			Cumulative	
		Kitchen	No. Kitchens	Total Feeding Strength	Number Kitchens	Feeding Strength	Kitchens	Tot Str	%	%
34398A000 MI Co (GS), MI Bn		32	1	32	1	32	1	32	1%	0%
17377L000 Tank Co, Tank Bn		67	16	1,072	17	1,104	17%	6,104	6%	6%
01309A200 Avn Unit Mnt Co (AVUM), GS Avn Bn		69	1	69	18	1,173	17%	7,173	7%	7%
06399A000 TAB FA Bn MLRS		76	1	76	19	1,249	18%	8,249	18%	7%
11067L100 Area Signal Co, Signal Bn		79	3	237	22	1,486	21%	9,486	21%	8%
06367A200 FA Btry 155SP (1x6) Plt Op [BN 06365A400]		93	3	279	25	1,765	24%	11,765	24%	10%
06367A200 FA Btry 155SP (1x6) Plt Op [BN 06365A500]		93	6	558	31	2,323	30%	14,088	30%	13%
01302A000 HHC, Div Avn Bde		95	1	95	32	2,418	31%	16,506	31%	14%
11068L400 Signal Support Co, Signal Bn		101	1	101	33	2,519	32%	19,025	32%	14%
44177A000 ADA Btry (SFV/MPADS)		107	3	321	36	2,840	35%	21,865	35%	16%
01389A200 Avn Unit Mnt Co (AVUM), Attack Bn (AH-64)		112	2	224	38	3,064	37%	24,929	37%	17%
06396A000 HHS FA Bn MLRS		113	1	113	39	3,177	38%	28,106	38%	18%
06366A400 HHB FA Bn 155SP Plt Ops HD [BN 06365A400]		114	1	114	40	3,291	39%	31,397	39%	18%
06366A500 HHB FA Bn 155SP Plt Ops HD [BN 06365A500]		116	2	232	42	3,523	41%	35,920	41%	20%
07247L200 Rifle Co, Inf Bn (BFV)		118	20	2,360	62	5,883	60%	41,803	60%	33%
06397A000 FA Btry, FA Bn MLRS		120	2	240	64	6,123	62%	47,926	62%	34%
01369A200 Avn Svc Trp (OH-58D)		127	1	127	65	6,250	63%	54,176	63%	35%
06369A200 Svc Btry, 155 SP Plt Ops HD [Bn 06365A400]		132	1	132	66	6,382	64%	57,558	64%	36%
06369A200 Svc Btry, 155 SP Plt Ops HD [Bn 06365A500]		132	2	264	68	6,646	66%	64,204	66%	37%
11066L400 HHC, Signal Bn (6 Node) MSE		133	1	133	69	6,779	67%	70,983	67%	38%
44178A000 ADA Btry (Avenger)		136	1	136	70	6,915	68%	77,898	68%	39%
06302L000 HHB, Divty Arty		137	1	137	71	7,052	69%	84,950	69%	40%
17287L000 Cav Trp, Cav Sqdn		142	3	426	74	7,478	72%	92,428	72%	42%
87004A200 Rear Cmd Post, HHC, Inf Div (M)		154	1	154	75	7,632	73%	99,060	73%	43%
44176A000 HHB,ADA Bn		156	1	156	76	7,788	74%	106,848	74%	44%
34396L000 HH&O Co, MI Bn		167	1	167	77	7,955	75%	114,803	75%	45%
01386A200 HHC, Avn Attack Bn (AH-64)		217	2	434	79	8,389	77%	123,192	77%	47%
17286L000 HHT Div Cav Sqdn		224	1	224	80	8,613	78%	131,805	78%	48%
63002L000 HHC/MMC, Spt Bn, Hwy Div		240	1	240	81	8,853	79%	139,658	79%	50%

Table A-6. Summary of Mechanized Infantry Division (TOE 87000A200) Kitchen Feeding Strengths With Maximum Use of Company Level H/S Ration Preparation (Cont'd)

TOE	Field Kitchen Location	Feeding Strength/ Kitchen	No. Kitchens	Total Feeding Strength	Cumulative		Kitchens Strength	Tot Str	Cumulative %
					Number Kitchens	Feeding Strength			
87042L100	HHC, Inf (Mech) Brigade	247	2	494	83	9,347	81%	52%	
87042L200	HHC, Armor Brigade	248	1	248	84	9,595	82%	54%	
01306A200	HHC, GS, Avn Bn	252	1	252	85	9,847	83%	55%	
07246L200	HHC, Inf Bn (BFV)	355	5	1,775	90	11,622	87%	65%	
17376L000	HHC, Tank Bn	359	4	1,436	94	13,058	91%	73%	
87004A200	Main Cmd Post, HHC, Inf Div (M)	437	1	437	95	13,495	92%	76%	
05336L000	HHC, Eng Bn, Hvy Div	446	3	1,338	98	14,833	95%	83%	
63006L000	HHD, Fwd Spt Bn (1x2), Hvy Div [BN 63005L300]	485	2	970	100	15,803	97%	89%	
63006L000	HHD, Fwd Spt Bn (2x1), Hvy Div [BN 63005L100]	490	1	490	101	16,293	98%	91%	
63886A000	HSC, Spt Bn (Avn)	606	1	606	102	16,899	99%	95%	
63136L000	HHD, MSB, Hvy Div	945	1	945	103	17,844	100%	100%	
Division Totals		----	103	17,844	----	----	----	----	----

Appendix B

Integrated Brigade Combat Team: Analysis of Field Feeding Support Plan and Field Kitchen Ration Break Requirements

This Appendix provides the detailed analysis of the field feeding support plan for the objective Integrated Brigade Combat Team (IBCT) (TOE 47100F300) and the resulting supported feeding strengths and ration break requirements by field kitchen and overall (overall unit? This is not in Appendix A). Composition of the objective IBCT force structure in terms of subordinate battalions, companies, and teams and unit strengths is as detailed on the U.S. Army Force Management Support Agency Requirements Documentation Directorate (USAFMSA RDD) web page <http://www.usafmsardd.army.mil/>.

This Appendix provides the same information/data for the IBCT force structure as Appendix A does for the Mechanized Infantry Division. Unit strengths are based on the full Level 1 TOE personnel authorizations and exclude any potential unit augmentations. As of May 01, the overall Level I authorized strength for the objective IBCT was 3,494. This strength excludes unit augmentations, which potentially total 331, and the Combat Service Support Company (CSSC) (TOE 63390F000), which does not initially deploy with the IBCT.

The CSSC augments the IBCT in terms of direct support level logistics, general supply support, motor transport support operations, organizational and direct support field maintenance, field feeding support, and health support. The CSSC consists of 4 platoons to include Headquarters and Services Platoon, Supply and Transportation Platoon, Maintenance Platoon, and Field Feeding Support Platoon. Total Level I strength for the CSSC is 223. The Field Feeding Support Platoon has all the cooks and food service equipment to provide the IBCT a group hot meal feeding capability. When the IBCT initially deploys, without the CSSC, it has no capability to prepare or provide hot group meals and troops subsist on MREs or other individual rations only. The Field Feeding Support Platoon has six field feeding teams. The six field feeding teams include: one Brigade Support Battalion team, one Field Artillery Battalion team, one Brigade/STA Team, and three Infantry Battalion Teams. With one exception, each team is designed, staffed, and equipped to provide it's supported units with UGR-As from one consolidated kitchen, and to provide UGR-Heat/Serves from either one consolidated kitchen or from individual company level kitchens. The one exception is the Brigade Support Battalion field feeding team. This team only has a consolidated field kitchen capability for both UGR-A and UGR-Heat/Serves.

Table B-1 details the IBCT field feeding support plan with the attached CSSC. The CSSC attaches to the Brigade Support Battalion. All CSSC elements, except for the five deployed Field Feeding Teams, are provided feeding support by the Headquarters Detachment Company, Brigade Support Battalion field feeding team. The TOE for the

Field Feeding Support Platoon lists the IBCT units provided feeding support by each of the six field feeding team. In Table B-1, the data under the column “UGR-A Field Kitchens,” details the units and total troops supported by each kitchen when each of the six field feeding teams operates a single kitchen to support all assigned units. These six kitchens can be utilized to provide supported units with either UGR-A or UGR-Heat/Serves. As with Table A-1, the bold entries in the table indicate where the kitchens locates/operates, and the indented or non-bold entries represent the units supported by the kitchen. In Table B-1, the data under the column labeled “Max UGR-H/S Field Kitchens” details the kitchen locations, supported units, and resulting field kitchen feeding strengths when the IBCT set-ups and utilizes company level Heat-Serve sites to the maximum extent possible. Based on authorized cooks and food service equipment, each team is capable of staffing and preparing Heat-Serve rations at company level, except for the Brigade Support Battalion which is only equipped for a single Battalion level operation. With maximum preparation of Heat-Serve rations at company level, there is a potential for 25 separate kitchens. Thus while the IBCT would set-up and operate only 6 separate kitchens for UGR-As, it could set-up and operate from 6 to 25 separate kitchens with UGR-Heat/Serves.

Table B-2 summarizes the relevant field feeding information and assumptions to derive the IBCT field feeding support plan detailed in Table B-1. Most of the information on how/where the battalion or company operates kitchens, elements attached out to other units for feeding support, units attached to for field feeding support, authorized cooks and food service equipment, etc. was extracted from the TOE for the Food Service Support Platoon.

For various size modules, Table B-3 summarizes the IBCT meal module requirements as a function of module size based on operating only six kitchens at the UGR-A kitchen sites detailed in Table B-1. Module requirements are determined by dividing the total number troops supported by each kitchen by the module size, rounding the result up to the next whole number, and then multiplying the result by the number of same type kitchens in the IBCT. For example, referring to Table B-3, for UGR-As each Infantry Battalion feeding team supports a total of 741 troops. This results in a ration break of 15 50-person modules per Infantry Battalion, or 45 total modules for the 3 Infantry Battalion teams. The resulting overall module requirements and with 6 consolidated kitchens as a function of module size is summarized at the end of Table B-3. Table B-4 summarizes the same information with maximum utilization of company level UGR-Heat/Serve preparation that would involve 25 separate kitchens. The resulting overall module requirements and with 25 separate kitchens as a function of module size is summarized at the end of Table B-4. By comparing Tables B-3 and B-4, one can see that the utilization of the smaller company level Heat-Serve sites significantly increases the number of modules required and resulting .

Table B-5 lists the 6 UGR-A kitchen sites detailed in Table B-1 in terms of supported feeding strengths from smallest to largest. Also detailed for each kitchen size, are the cumulative percent of total kitchens and cumulative percent of total troops

supported. Table B-6 summarizes similar type information based on the maximum 25 separate UGR-H/S preparation sites for the IBCT.

Table B-1 Integrated Brigade Combat Team (IBCT) Field Kitchen Locations, Supported Units, and Feeding Strengths

Field Kitchen and Supported Units	SRC	UGR-A Field Kitchens				Max UGR-H/S Field Kitchens			
		Units/ Kitchen	Feeding Strength/ Kitchen	No. Kitchens	Total Feeding Strength	Units/ Kitchen	Feeding Strength/ Kitchen	No. Kitchens	Total Feeding Strength
HHC, IBCT									
HHC, IBCT	47102F300	1	690	1	690	1	123	1	123
MI Co, IBCT	34143F300	1	119			1	119		
Sig Co, IBCT	11103F300	1	71			0	71		
HHT, RSTA Sqdrn	17095F300	1	73			0	73		
RECCE, RSTA Sqdrn	17097F300	1	82			0	82		
Surveillance, RSTA Sqdrn	34117F300	3	90			0	90		
BDE/RSTA FF Tm, Qmtr Det									
Erg Co (118-117)	05063F300	1	57			0	57		
Eng Co (118-117)		1	17			1	1	3	
MI Co, IBCT									
MI Co, BCT	34143F300	0	0	0	0	1	73	1	73
Field Feeding Team		0	71			1	71		
Sig Co, IBCT									
Sig Co, IBCT Tm	11103F300	0	0	0	0	1	75	1	75
Field Feeding Team		0	73			1	73		
HHT, RSTA Sqdrn									
HHT, RSTA Sqdrn	17095F300	0	0	0	0	1	84	1	84
Field Feeding Team		0	82			1	82		
RECCE, RSTA Sqdrn									
RECCE Tmop, RSTA Sqdrn	17097F300	0	0	0	0	1	92	3	92
Field Feeding Team		0	90			1	90		
			2			1	2		

Table B-1 Integrated Brigade Combat Team (IBCT) Field Kitchen Locations, Supported Units, and Feeding Strengths (Cont'd)

Field Kitchen and Supported Units	SRC	UGR-A Field Kitchens				Max UGR-H/S Field Kitchens			
		Units/ Kitchen	Feeding Strength/ Kitchen	No. Kitchens	Total Strength	Units/ Kitchen	Feeding Strength/ Kitchen	No. Kitchens	Total Strength
Surveillance, RSTA Sqdrn									
Surveillance Troop, BCT		34117F300	0	0	0	1	1	1	59
Field Feeding Team		0	57	2	1	1	57	2	59
HHC, Inf Bn									
HHC, Inf Bn		07096F300	1	153	3	2223	1	1	648
Rifle Co, Inf Bn		07097F300	3	171			0	153	
Eng Co (-)		05063F300	1	39			1	171	
Anti Armor Co, BCT (-)		07093F300	1	17			1	39	
Inf Bn FF Tm, Qmtr Det		1	19				1	17	
							1	7	
Rifle Co, Inf Bn									
Rifle Co, Inf Bn		0	0	0	0	1	1	1	1575
Inf Bn FF Tm, Qmtr Det		0	171	4		1	171	4	
HSB, FA Bn									
HSB, FA Bn 155SP (BCT)		06386F300	1	73	1	283	1	1	106
FA 155 Btry (BCT)		06387F300	3	57			0	73	
Target Acq Hqr Tm		06530FA00	1	3			1	57	
WLRS (TPQ-36) Team		06530FB00	1	6			1	3	
WLRS (TPQ-37) Team		06530FC00	1	12			1	6	
Meteorological Team		06530FD00	1	6			1	12	
Survey Section Team		06530FE00	1	2			1	6	
FA Bn FF Tm, Qmtr Det		1	10			1	1	2	
							1	4	
FA Btry, FA Bn									
FA Btry, FA Bn		06387F300	0	0	0	1	1	1	59
Field Feeding Team		0	57	2			1	2	

Table B-1 Integrated Brigade Combat Team (IBCT) Field Kitchen Locations, Supported Units, and Feeding Strengths (Cont'd)

Field Kitchen and Supported Units	SRC	UGR-A Field Kitchens				Max UGR-H/S Field Kitchens			
		Units/ Kitchen	Feeding Strength/ Kitchen	No. Kitchens	Total Feeding Strength	Units/ Kitchen	Feeding Strength/ Kitchen	No. Kitchens	Total Feeding Strength
HDC, Bde Spt Bn									
HDC, BSB	63106F300	1	521	1	521				
Bde Support Co, BSB	43107F300	1	144			1	521	1	521
Medical Co, BSB	08108F300	1	171			1	144		
BSB FF Tm, Qmtr Det						1	171		
CSSC(-)	63390F000	1	67			1	67		
		1	14			1	14		
		1	125			1	125		
IBCT Totals				6	3717			25	3717

Table B-2: Integrated Brigade Combat Team (IBCT) Field Feeding Notes and Assumptions

Field Feeding Support Plan and Assumptions

This analysis is based on the composition and unit strengths of the Integrated Brigade Combat Team force structure provided by CASCOM as of May 2001. The overall IBCT force structure is continuing to evolve and will change over time.

The Field Feeding Support Platoon (FFSP) provides field feeding support to the Integrated Brigade Combat Team (IBCT), the Brigade Support Battalion, and the Engineer Company. The FFSP is attached to the Combat Service Support Company (TOE 63390F000). The FFSP has six field feeding teams that are specifically tailored to the units they are designated to support. Each team is staffed and equipped to provide the complete range of rations to include 3 quality meals per day to all supported units. For UGR-A rations, each team is staffed and equipped to support assigned units from one consolidated field kitchen only. For UGR-H/S rations, except for the Brigade Support Battalion (BSB) Team, each team can support all assigned units from one consolidated kitchen, or it can set up separate Company level H/S operations utilizing the authorized Kitchen Company Level (KCL) equipment. The BSB team is staffed and equipped to provide both UGR-A and UGR-H/S rations from one consolidated kitchen only. The teams are:

Brigade Field Feeding Team - This team supports the Brigade HHC, MI Co, RSTA, and Signal Company, IBCT. The team has 17 cooks, 2 Mobile Kitchen Trailers (MKTs), and KCLs to support Company level H/S ration preparation.

Infantry Field Feeding Team. There are three of these teams. Each team is staffed and equipped to support 1 Infantry Battalion to include 1 HHC and 3 Rifle Companies, and in addition 1/3rd of the Engineer Company, and 1/3 of the Antiarmor Company. Each team has 19 cooks, 2 MKTs, and KCLs to support Company level H/S ration preparation.

Artillery Field Feeding Team. This team provides field feeding support to the FA Bn to include 1 Headquarters and Service Battery, 3 Field Artillery Batteries, and various small attached teams. The team has 10 cooks, 1 MKT, and KCL to support Company level H/S ration preparation.

Brigade Support Battalion (BSB) Field Feeding Team. The BSB team supports the BSB elements to include Headquarters Detachment Company, Brigade Supply Company, Brigade Medical Company, and Combat Service Support Company elements not attached out. The team has 14 cooks, 2 MKTs, and no KCLs. The team provides supported units both UGR-A and UGR-H/S rations from one consolidated field kitchen.

**Table B-3. Integrated Brigade Combat Team (IBCT) Module Requirements Based on UGR-A
Kitchen Locations**

Kitchen Location	UGR-A Kitchen Sites			Authorized Modules				
	Feeding Str/ Kitchen	No. Kitch.	Total Feeding Strength	18	36	50	54	72
HHC, IBCT	690	1	690	39	20	14	13	10
MI Co, IBCT	0	0	0	0	0	0	0	0
Sig Co, IBCT	0	0	0	0	0	0	0	0
HHT, RSTA Sqdrn	0	0	0	0	0	0	0	0
RECCE, RSTA Sqdrn	0	0	0	0	0	0	0	0
Surveillance, RSTA Sqdrn	0	0	0	0	0	0	0	0
HHC, Inf Bn	741	3	2,223	126	63	45	42	33
Rifle Co, Inf Bn	0	0	0	0	0	0	0	0
HSB, FA Bn	283	1	283	16	8	6	6	4
FA Btry, FA Bn	0	0	0	0	0	0	0	0
HDC, Bde Spt Bn	521	1	521	29	15	11	10	8
Totals	---	6	3,717	210	106	76	71	55
Total Meals	---	---	3,780	3,816	3,800	3,834	3,960	3,960
% Over Issues	---	---	1.7%	2.7%	2.2%	3.1%	6.5%	

Table B-4. Integrated Brigade Combat Team (IBCT) Module Requirements Based on Maximum Use of Company Level UGR-H/S Kitchens

Kitchen Location	Max UGR-H/S Kitchen Sites			Number Modules Auth			
	Troops/ Kitchens	No. Kitch.	Total Feeding Strength	18	36	50	54
HHC, IBCT	123	1	123	7	4	3	3
MI Co, IBCT	73	1	73	5	3	2	2
Sig Co, IBCT	75	1	75	5	3	2	2
HHT, RSTA Sqdrn	84	1	84	5	3	2	2
RECCE, RSTA Sqdrn	92	3	276	18	9	6	6
Surveillance, RSTA Sqdrn	59	1	59	4	2	2	1
HHC, Inf Bn	216	3	648	36	18	15	12
Rifle Co, Inf Bn	175	9	1,575	90	45	36	27
HSB, FA Bn	106	1	106	6	3	2	2
FA Btry, FA Bn	59	3	177	12	6	6	3
HDC, Bde Spt Bn	521	1	521	29	15	11	8
Totals	....	25	3,717	217	111	88	83
Total Meals	....	....	....	3,906	3,996	4,400	64
% Over Issues	....	....	....	5.1%	7.5%	18.4%	4,608
						20.6%	4,608
						24.0%	24.0%

Table B-5. Integrated Brigade Combat Team (IBCT) UGR-A Kitchen Location Supported Feeding Strengths

TOE	Field Kitchen Location	Feeding Strength/ Kitchen	No. Kitchens	Total Feeding Strength	Cumulative		Kitchens	Feeding Strength	Cumulative %	Tot Str %
					Number	Kitchens				
HSB, FA Bn	283	1	283	1	283	1	283	1	17%	8%
HDC, Bde Spt Bn	521	1	521	2	804	2	33%	22%		
HHC, IBCT	690	1	690	3	1,494	3	50%	40%		
HHC, Inf Bn	741	3	2,223	6	3,717	6	3,717	6	100%	100%
IBCT Totals	...	6	3,717	...	3,717	...	3,717	...	...	...

Table B-6. Integrated Brigade Combat Team (IBCT) Kitchen Supported Fielding Strengths With Maximum Use of Company Level H/S Ration Preparation

TOE	Field Kitchen Location	Feeding Strength/ Kitchen	No. Kitchens	Total Feeding Strength	Cumulative		Kitchens	Feeding Strength	Cumulative %	Tot Str %
					Number	Kitchens				
Surveillance, RSTA Sqdrn	59	1	59	1	59	1	59	1	4%	2%
FA Btry, FA Bn	59	3	177	4	236	4	236	16	16%	6%
MI Co, IBCT	73	1	73	5	309	5	309	20	20%	8%
Sig Co, IBCT	75	1	75	6	384	6	384	24	24%	10%
HHT, RSTA Sqdrn	84	1	84	7	468	7	468	28	28%	13%
RECCE, RSTA Sqdrn	92	3	276	10	744	10	744	40	40%	20%
HSB, FA Bn	106	1	106	11	850	11	850	44	44%	23%
HHC, IBCT	123	1	123	12	973	12	973	48	48%	26%
Rifle Co, Inf Bn	175	9	1,575	21	2,548	21	2,548	84	84%	69%
HHC, Inf Bn	216	3	648	24	3,196	24	3,196	96	96%	86%
HDC, Bde Spt Bn	521	1	521	25	3,717	25	3,717	100	100%	100%
IBCT Totals	...	25	3,717	...	3,717	...	3,717	...	...	...